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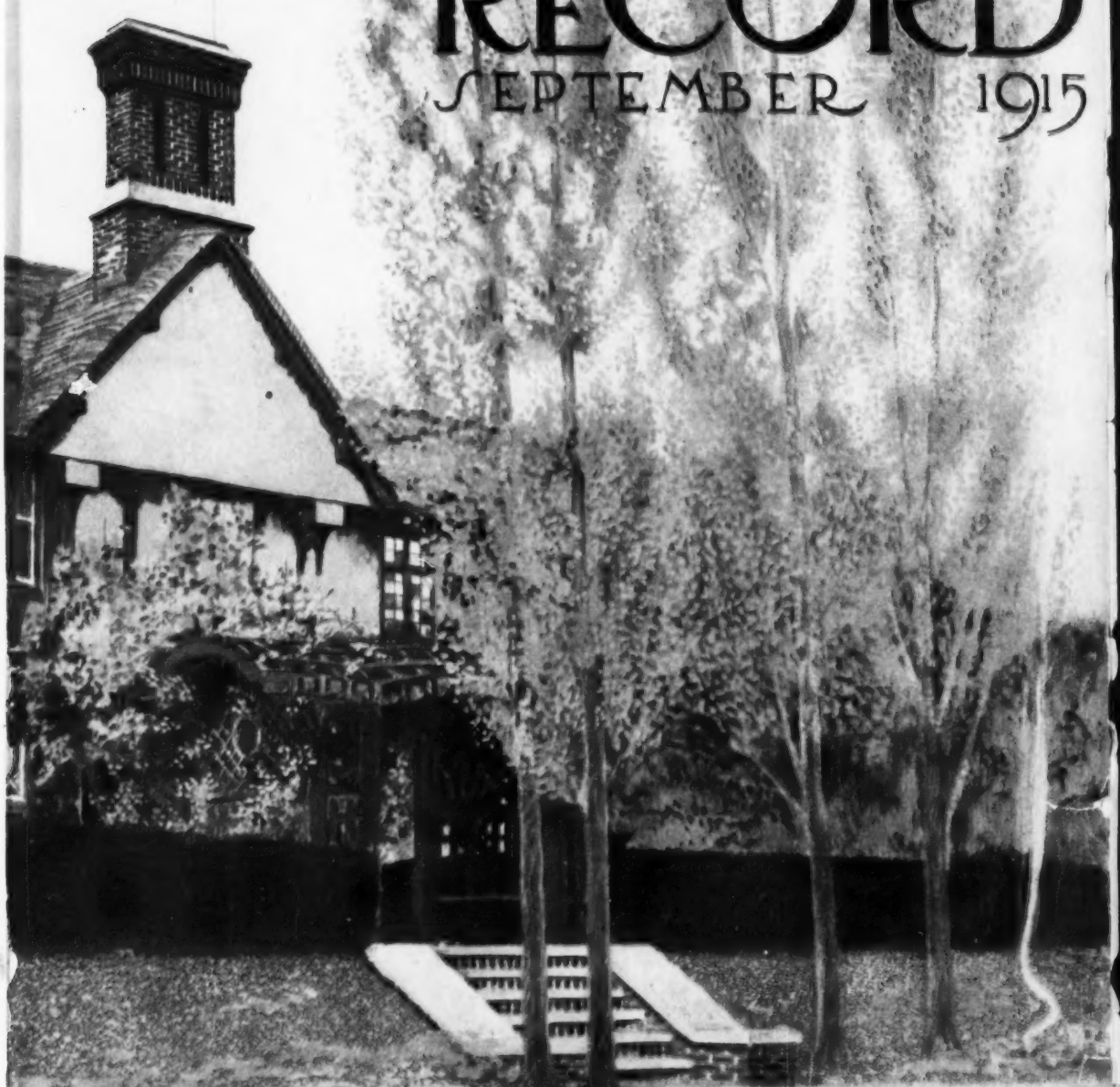
SEPTEMBER 1915



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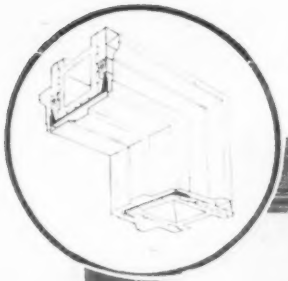

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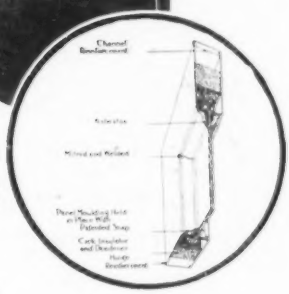

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VOL. XXXVIII. No. 3 SEPTEMBER, 1915 SERIAL NO. 204

THE ARCHITECTURAL RECORD

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MAIN ENTRANCE GATE—RESIDENCE OF STUART DUNCAN, ESQ., NEWPORT, R. I. JOHN RUSSELL POPE, ARCHITECT.

THE ARCHITECTVRAL RECORD

SEPTEMBER, 1915

VOLVME XXXVIII NVMBER III

The STUART DUNCAN RESIDENCE AT NEWPORT

JOHN RUSSELL POPE, ARCHITECT

BY HERBERT CROLY

NEWPORT has been a favorite residence for well-to-do Americans for a longer period than has any seaside resort in the United States. Its importance began before the war, although at that time the people who went there did not build houses. Soon after the war was over families who lived during the winter and spring in other parts of the country began to construct summer residences in Newport. They have continued to do so more or less ever since.

Thus Newport has become probably the most interesting place in the country in which to study the history of modern American villa architecture. It contains a large number of houses constructed between 1868 and 1880, which was an extremely bad period in the history of American architecture, but one which contained the promise of future betterment. Newport has a still larger number of examples derived from the period between 1880 and 1895. Indeed, this period may be said to belong to Newport more than to any other one part of rural America. It was just at that time that very large fortunes began to be accumulated and their owners began to make them the excuse for building large and expensive country residences. Newport was the scene of the first era of extravagant attempts to provide an adequate setting for the life of the modern American millionaire. The results were in some respects rather absurd. Millions of dollars were spent on marble palaces which occupied an acre or two of space between the sea and the street, and were wholly lacking in the surroundings and approaches necessary to give them any propriety in their landscape. Towards the end of the period the architectural standards embodied in these houses began decidedly to improve, and had Newport continued to be as popular with well-to-do Americans as it had been up to 1895, both the general aspect of the place and the

PLAN OF THE GROUNDS AND FIRST FLOOR—RESIDENCE OF STEWART DUNCAN, ESQ., NEWPORT, R. I. JOHN RUSSELL POPE, ARCHITECT.

general architectural average would have been changed very much for the better. During the last twenty years, however, Newport has declined in popularity. Well-to-do Americans have preferred to build their country places in a location which permitted them to secure a larger acreage and to arrange for a more diversified and more convenient life in the country. They have built their new houses in the immediate vicinity of Boston, New York and Chicago, and the best examples of American domestic architecture are to be found in places within twenty-five to forty miles of large cities, such as Lake Forest, in Illinois, or the North Shore of Long Island.

We do not mean to imply, of course, that during this period Newport has been entirely neglected. A sufficient number of houses have been built there during the last twenty years to illustrate the changes which have taken place during that period in American architectural tendencies and motives. The houses that have been built, particularly during the last ten years, have none of the faults of the earlier flamboyant period. They are none of them palatial in their dimensions, ostentatious in material, or lavish in ornamentation. The reaction against building palaces has won a complete triumph, and the good American, no matter how wealthy he may be, is now content to live in a comparatively modest and unpretentious house.

These modest, unpretentious houses are designed in almost as many different styles as were the palaces of the last generation, but the feeling for style has in the meantime become very much finer and more delicate. These comparatively unpretentious dwellings are now incomparably more idiomatic, and at the same time more distinguished, than were their predecessors. The gibe, which had a certain measure of truth in it twenty years ago, that American architecture was either bizarre or Beaux-Arts, is no longer true, and one of the best recent illustrations of this fact is contained in the residence which Mr. John Russell Pope has designed for Stuart Duncan, Esq., on the shore of Newport.

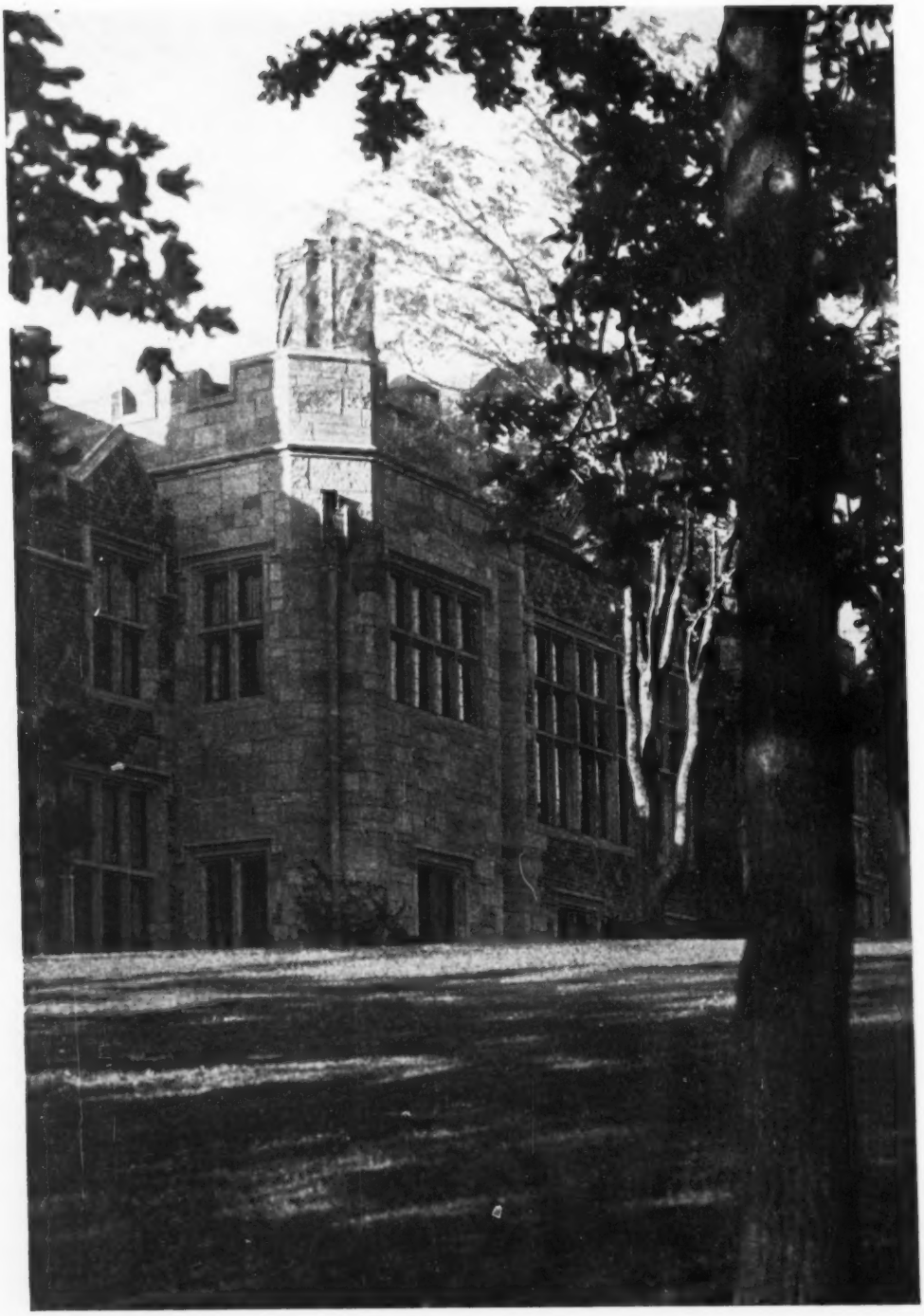
The style of Mr. Duncan's residence is that of an early English manor house. Mr. Pope has not been accustomed to take his models from English sources. He has, until recently, been far more affected by French and Italian influences, but the use of his French and Italian precedents has been very free. He has always displayed a somewhat experimental and adventurous disposition in adapting the older styles to modern American uses. The Duncan house remains, nevertheless, a striking example of his versatility. Although it is his first serious attempt to design an English manor house, he has succeeded in creating one of the best examples of this type in the whole country. The house possesses a picturesqueness and charm that is unusually rare. It looks extremely easy to design a house in these loose irregular styles, because the imagination of the designer is not tied down by some rigid tradition of form, as it is in the case of Renaissance buildings. Of course, this apparent ease is really illusory, for it requires a more special and higher grade of architectural talent to make a house of this kind charming and idiomatic than it would to do the same thing with a house derived from one of the Renaissance models. The proof of this fact is that so many architects have tried and so few have succeeded. In this instance Mr. Pope has unquestionably obtained a very large measure of success. He has built a very large, spacious, and apparently rambling house, whose design is full of incidents and irregularities, yet which at the same time is a peculiarly happy example of the effective composition of masses and the grouping of colors and materials. There are few houses in this country which give one the impression of having been so carefully studied in all its details. Attention is called particularly to the treatment of chimneys, the patterns in which the brick has been laid, the vigorous design of the stonework, and the peculiarly successful effect of the roof. The effect of every stone and every brick that the eye rests upon appears to have been carefully considered in order to make it play its proper part in the total effect.

The details of the interior have been quite as carefully studied as those of the exterior. We have rarely seen a set of apartments in a modern American house

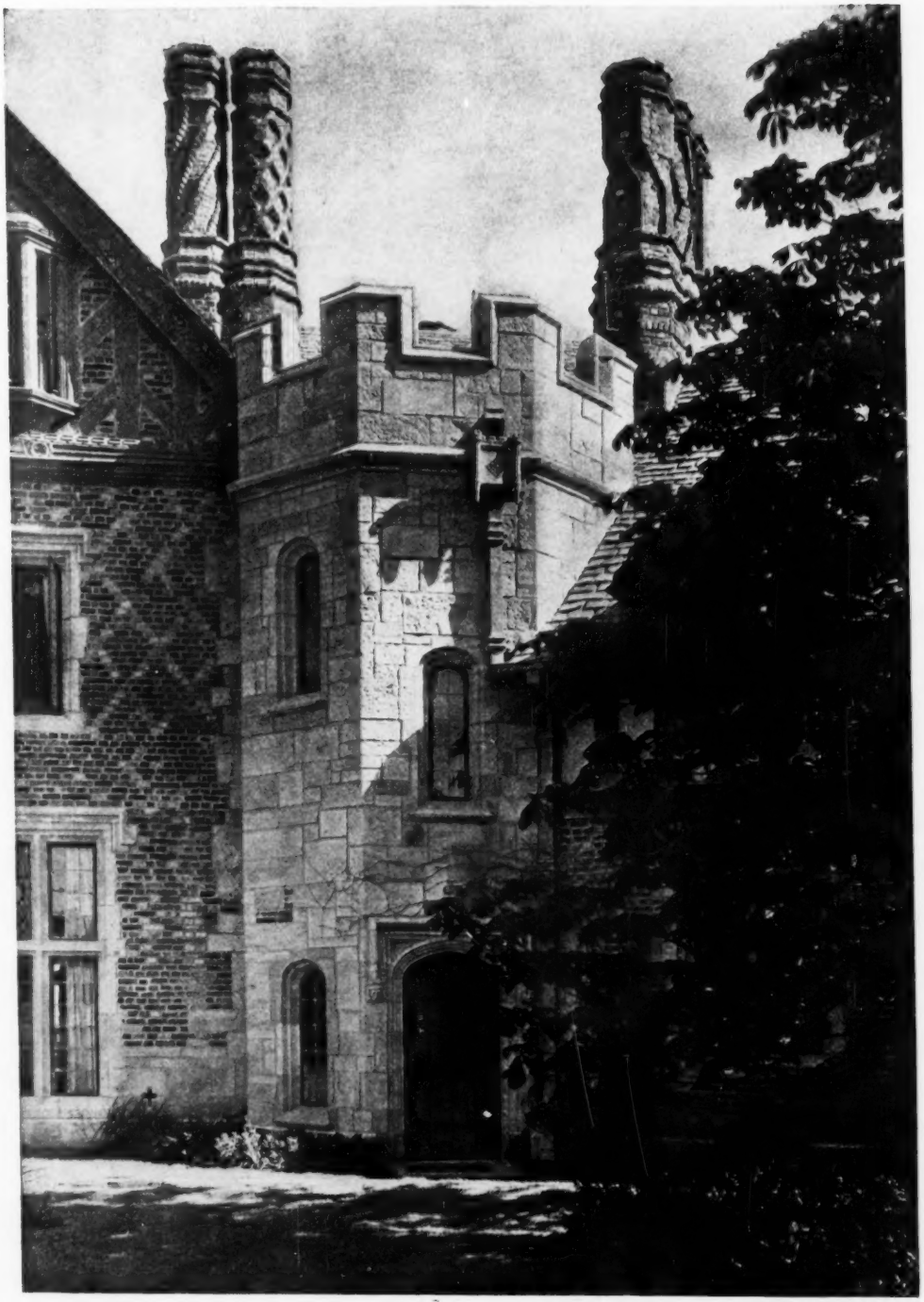
DETAIL OF ENTRANCE SIDE—RESIDENCE OF STUART DUNCAN, ESQ., NEWPORT, R. I. JOHN RUSSELL POPE, ARCHITECT.

See p. 499

VIEW FROM THE SOUTH—RESIDENCE OF STUART DUNCAN, ESQ., NEWPORT, R. I. JOHN RUSSELL POPE, ARCHITECT.



MAIN STAIR TOWER—RESIDENCE OF STUART DUNCAN, ESQ., NEWPORT, R. I. JOHN RUSSELL POPE, ARCHITECT.



SMALL STAIR TOWER—RESIDENCE OF STUART DUNCAN, ESQ., NEWPORT, R. I. JOHN RUSSELL POPE, ARCHITECT.

VIEW IN NORTH PORCH—RESIDENCE OF
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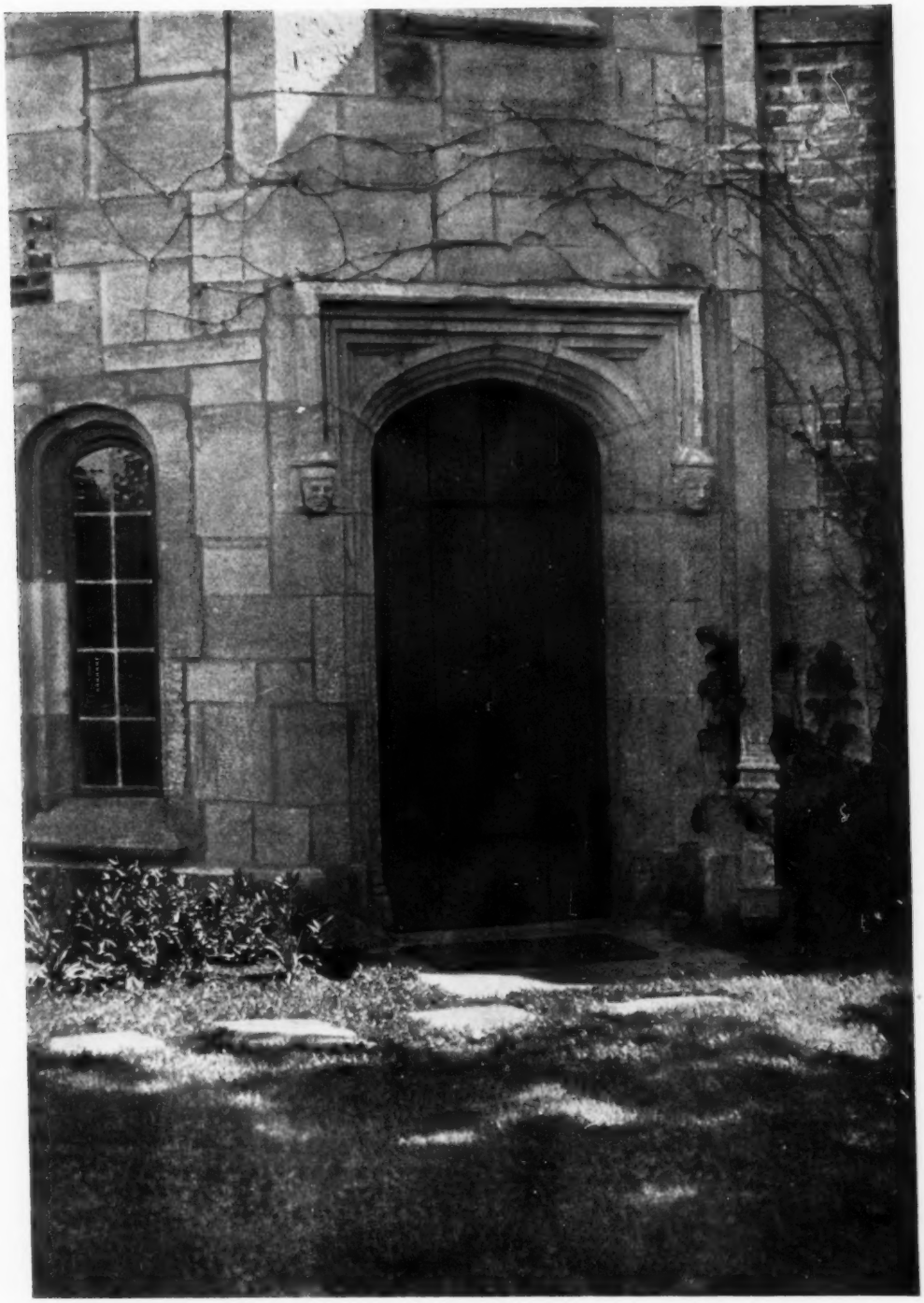

DOORWAY IN SMALL STAIR TOWER—RESIDENCE OF STUART DUNCAN, ESQ., NEWPORT, R. I. JOHN RUSSELL POPE, ARCHITECT.

DETAIL OF SIDE TOWARD HARBOR—RESIDENCE OF STUART DUNCAN, ESQ., NEWPORT, R. I. JOHN RUSSELL POPE, ARCHITECT.

SERVICE WING—RESIDENCE OF STUART DUNCAN, ESQ., NEWPORT, R. I.
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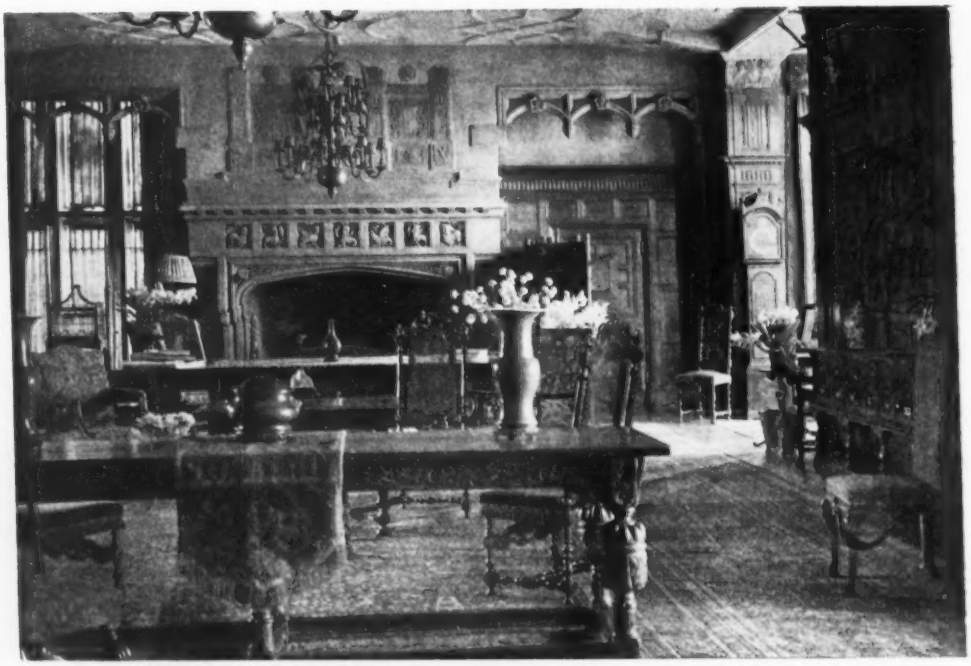
STAIRWAY—RESIDENCE OF STUART DUNCAN, ESQ., NEWPORT, R. I. JOHN RUSSELL POPE, ARCHITECT.

WROUGHT IRON GRILLE BETWEEN VESTIBULE AND ENTRANCE HALL—RESIDENCE OF STUART DUNCAN, ESQ., NEWPORT, R. I. JOHN RUSSELL POPE, ARCHITECT.



LIVING ROOM—RESIDENCE OF STUART DUNCAN, ESQ., NEWPORT, R. I.
John Russell Pope, Architect.

LIVING ROOM FIREPLACE—RESIDENCE OF STUART DUNCAN, ESQ., NEWPORT, R. I.
John Russell Pope, Architect.

DOOR FROM GALLERY TO DINING ROOM—RESIDENCE OF STUART DUNCAN, ESQ., NEWPORT, R. I.
John Russell Pope, Architect.

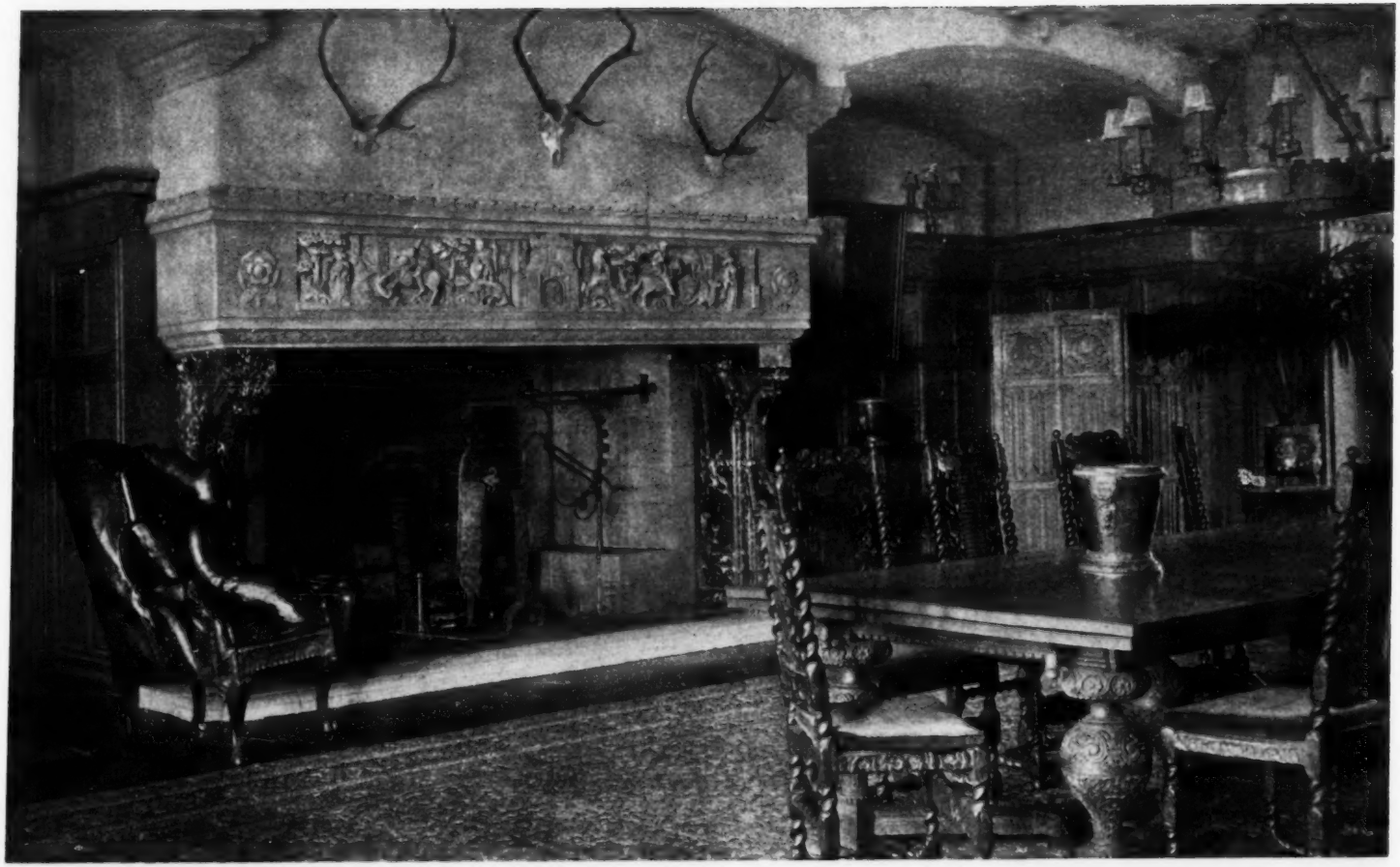
ENTRANCE HALL—RESIDENCE OF STUART DUNCAN, ESQ., NEWPORT, R. I.
John Russell Pope, Architect.

GREAT HALL, LOOKING INTO GALLERY—RESIDENCE OF STUART DUNCAN, ESQ., NEWPORT, R. I. JOHN RUSSELL POPE, ARCHITECT.

LONG GALLERY—RESIDENCE OF STUART DUNCAN, ESQ., NEWPORT, R. I.
John Russell Pope, Architect.

DINING ROOM—RESIDENCE OF STUART DUNCAN, ESQ., NEWPORT, R. I.
John Russell Pope, Architect.

A CORNER OF THE LIBRARY—RESIDENCE OF STUART DUNCAN, ESQ., NEWPORT, R. I. JOHN RUSSELL POPE, ARCHITECT.



DINING ROOM FIREPLACE—RESIDENCE OF STUART DUNCAN, ESQ., NEWPORT, R. I. JOHN RUSSELL POPE, ARCHITECT.

SERVICE GATE—RESIDENCE OF STUART DUNCAN, ESQ., NEWPORT, R. I.
JOHN RUSSELL POPE, ARCHITECT.

which betray such elaborate attention to detail. They are worth studying as one of the most interesting examples of early English interiors in the United States, and one of the most sympathetic interpretations of that type of domestic interior design.

The entrance hall is the center and core of the plan. It leads directly through the house. To the left there is a spacious living room, to the right a long gallery leading to an equally spacious dining-room. Beyond the dining-room there is an east porch on which meals can also be served. Between the dining-room and the entrance hall there is a smaller room which is used as a library.

On entering the hall from the stone vestibule through the wrought steel grilles one is at once aware that the house was designed by an architect who knew how to get the full architectural value of his plan. The eye is tempted to travel from one end of the great hall down to the Gothic screen at the end of the gallery through which can be seen the large stone mantel of the dining-room.

Wherever, in this long vista, the eye rests for a moment it is gratified by some quaint architectural detail or mellow time-worn furnishing. In the hall itself the rich walls of panelled oak, stone and plaster are broken by great mullioned windows—hospitable bays with leaded and emblazoned glass that tempers the light to the subdued harmony of deep-toned woodwork and tapestries. There is a profusion of Jacobean tables, Gothic credences, William and Mary cabinets, chests of English lac, chairs, settles and the like, carefully chosen antiques representing perhaps every period of English craftsmanship from the fifteenth to the sixteenth century, in keeping with the dominating Gothic mantel fashioned in boldly conspicuous limestone.

The long gallery forms a connecting link between the master's portion of the house and the service wing. Its windows, mullioned and transomed, command a fine view of the bay. Wainscoted in oak, it has a long wagon-headed ceiling covered with delicate early Tudor tracery. Here, also, in addition to the paintings which one expects to find in this apartment, are many interesting pieces of old furniture and curios, such as bronze cannon and a model of Sir Francis Drake's flagship. A carved Gothic screen, reminiscent of its prototype at Compton Wynyates, separates the long gallery from the dining hall.

This handsome room, framed in oak, is painted and enameled after the Tudor manner; and the neutral grays of the decorated woodwork, of the stone mullions and transoms, of the carved stone mantel, with its massive supports of black and gold marble, and the dark tones of the planked teakwood floor mirroring the length of the room, form a fitting background for the coloring of the oriental rugs, the velvet hangings and the carved and inlaid furniture.

Returning to the gallery, we next enter the library, with its early fifteenth century mantelpiece, which is surrounded by linenfold panelling and flanked on either side by arched recesses, giving space for books and bric-a-brac. The quiet treatment of the mantelpiece and its setting accords admirably with the purpose of the room.

In the foregoing paragraphs we have explored but the smaller part of a notable house, the whole of which merits attention. However, we have gone far enough to ascertain the general character of the architect's work and to form an opinion of its value; and no purely descriptive text can supply more as a basis for further study than the accompanying illustrations give.

MAIN ENTRANCE—YALE CLUB, NEW YORK.
JAMES GAMBLE ROGERS, ARCHITECT.

The Yale Club's New House

By Marrion Wilcox

IN his admirable work entitled *Éléments et Théorie de L'Architecture,* Professor J. Guadet elaborates one of those general principles which we shall do well to bear in mind if we wish to do full justice to the careful planning of this great structure.

He begins with the assertion that all the arts, and architecture most of all, have suffered loss of vital energy through their subordination to archæology. If we had to-day a Raphael or a Paul Veronese, they would not be permitted to make either the "School of Athens," or the "Marriage in Cana," because archæology would bring forward the objection that those splendid masterpieces were inexact. Thus architecture tended in the nineteenth century to become merely an adaptation of forms created in times long past—of "illogical anachronisms," to keep the learned teacher's precise words. For example, in Munich the architects imagine utilitarian Parthenons; in London, in response to the wholly modern requirements of clubs, you find once more such old acquaintances as the Farnese Palace, the Procuraties, the colonnade of the Place de la Concorde, all copied obsequiously, even to the moulding. The Italian art only knows how to repeat itself; and everywhere the same story, even in America, a country which, though young, is as old in art as old Europe. In France, at the beginning of the nineteenth century, the ideal of æstheticism was to conceive *a priori* an edifice which, at least in design, should be Roman; somewhat later a violent reaction substituted in place of the distinctively Roman edifices, others which, being characteristic of the Middle Ages, were indeed nearer to us in point of time, but even less suited to the uses of modern civilization. Fortunately, at last the leading spirits in the profession of architecture came to realize, and to teach others, that independence is not attained merely by changing badges of servitude, and little by little our art has liberated itself from architectural palæontology. To-day we know and we proclaim that architecture has the right to be free, that liberty alone can give it assurance of life and fecundity, or, let us rather say, salvation.

In such terms as the foregoing (but at greater length in the French original) does M. Guadet explain, defend, and commend the endeavor of architects of the present generation to secure the maximum of beauty and utility by regarding their art as an art of spontaneous and free expression—so far as that may be possible. The general principle to which I referred in the first paragraph is that architecture has the right to be free; and it is always interesting to notice the successful assertion of that principle, within such restrictions as location imposes.

In a general way the new Yale Club building can be said to be of a simple and dignified neo-classical design, decidedly Italian in spirit, with colonial

modifications; and there has been no hesitation about changing rules or sacrificing any details or regulations prescribed in the nineteenth century servile and unreflecting employment of classical architecture. Wherever such change became necessary in order to realize a better design or a more practical general effect, the inherent right of architecture has been invoked to meet new problems in a new way—with independent, yet considerate, interpretation.

We shall have more to say about some of the peculiar architectural problems and their solution, and about the restrictions imposed by location, after we have traced the development of the club from its beginning, eighteen years ago. Of course, we must understand clearly what the club has desired to accomplish before we come to description and truly appreciative criticism, because it is of prime importance, when discussing the merits of any new building, to determine whether it is well designed to serve its purpose or purposes. Let us, therefore, consider the main purposes held at the beginning, and cherished even more warmly to-day—purposes which the architect and building committee have sought to express in permanent and attractive architectural form.

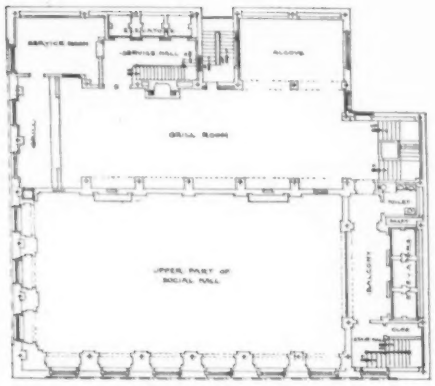
The club was started in 1897. The main object was to provide, for the benefit of Yale men who were scattered in various parts of New York City and neighboring cities and towns, the facilities they had lacked up to that time for continuing the traditions of undergraduate life. That was the initial purpose. The national character of the institution came as a later development. The movement was democratic and popular—not headed at first by the most distinguished graduates, though the older men soon gave loyal adhesion. The Yale Alumni Association had about six or seven hundred members at that time. Enrollment for the Yale Club quickly passed that number. The Alumni Association, promptly and unanimously agreeing to the establishment of the club, surrendered its own duties to the new institution, as to a natural successor. The retiring president of the Alumni Association became the first president of the club.

The committee on choice of site selected a house on the north side of Madison Square, which was leased for $6,000 a year. The Club was a success from the beginning. It was made to pay from the beginning, thanks to hard work by club officers. In membership it grew enormously; and after a surplus of $25,000 had been accumulated the decision was reached to build a club-house of suitable dimensions in West Forty-fourth Street. This was effected by the formation of a building company, empowered to build and lease to the club—an arrangement which actually has been to such an extent approved by experience that it served as a basis for the subsequent arrangements for the third club building, the subject of this paper.

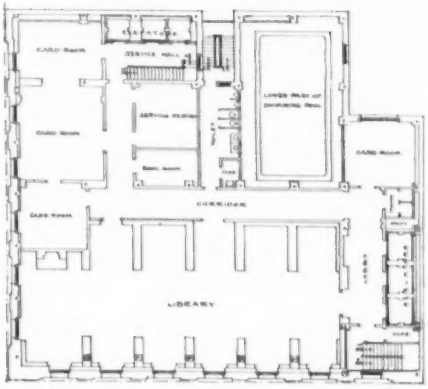
The building in West Forty-fourth Street (the second club-house) was so constructed that, if the club should fail, it could be turned into a bachelor apartment house, like the Royalton.

The group of men who started the club—practically the first set of officers—retained their positions for six years, that is to say, until the club was established in the 30 West Forty-fourth Street building. They had decided to see it through. That object having been accomplished, these men all declined renomination. The attitude of influential members has constantly been democratic; of the men holding offices, has been unselfish. In order to secure continuity of tradition, ex-members of the council are always invited to council meetings and often serve on special committees. The club never increased the amount of its dues until this year. It has never received large gifts, but has paid its own way on a business basis. At an early stage of the discussion in regard to the new building, the intimation was received that a large gift (more than $600,000) was available—with certain conditions attached. It was decided that the offer should be declined. The members preferred to have such donations made to the university at New Haven, where the money was more needed. Ever since the somewhat narrower original object, mentioned above,

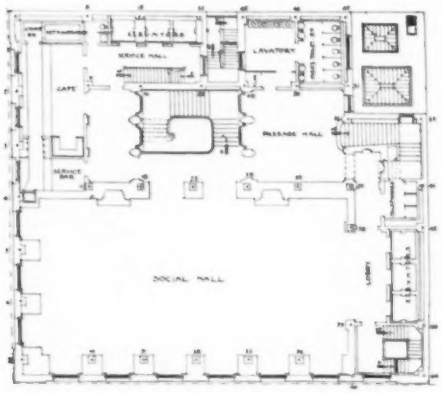
THE YALE CLUB, NEW YORK.
JAMES GAMBLE ROGERS, ARCHITECT.



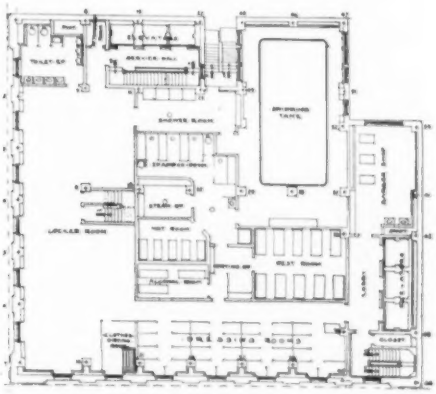
Grill Room Floor.



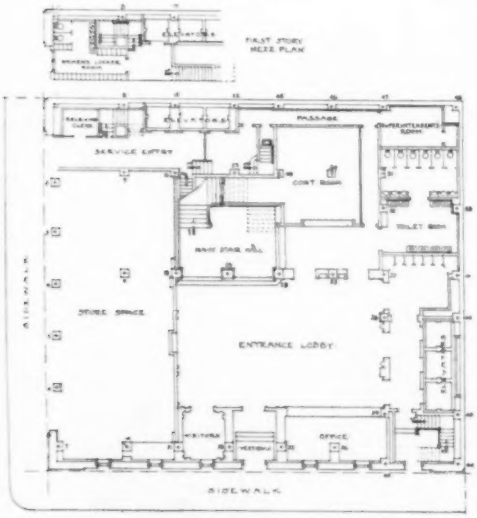
Fourth Floor.



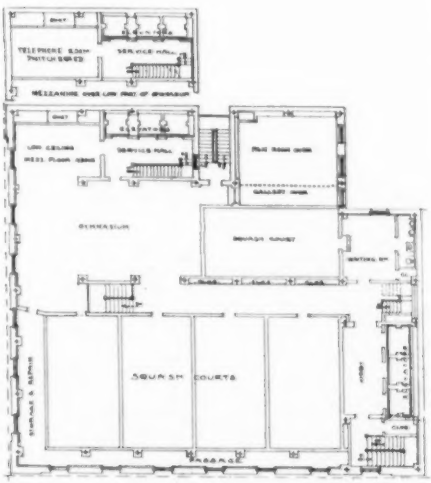
Second Floor.



Fifth Floor.



First Floor.



Sixth Floor.

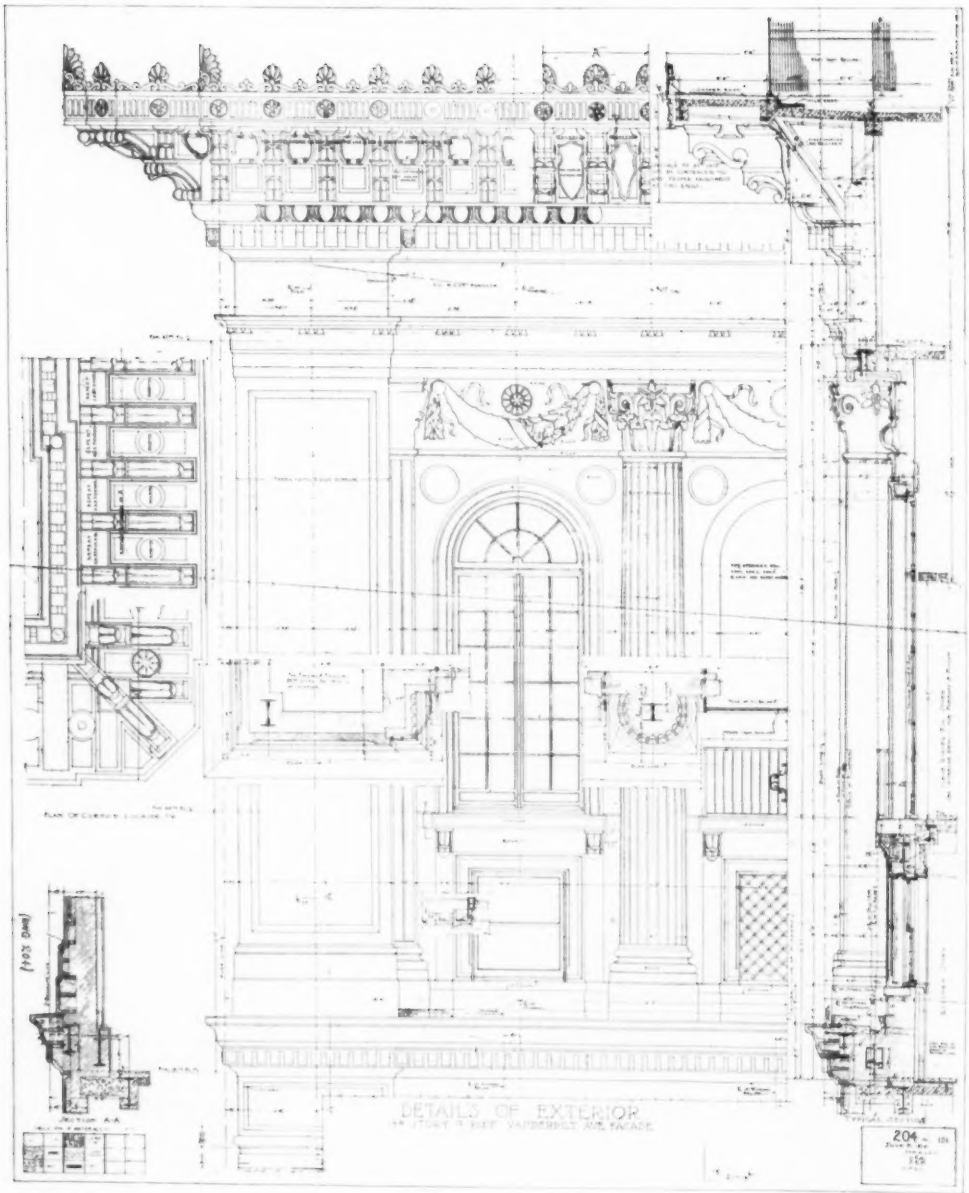
FLOOR PLANS OF THE YALE CLUB, NEW YORK.
James Gamble Rogers, Architect.

Twentieth Floor.

was attained, the aim has been constantly to build up the interests of Yale and to make the club a centre of activity in behalf of Yale in a broad, national sense. Always, therefore, we have been aware of the obligation to offer such attractions to non-resident members as would enable us to realize that destiny. The opinion is held—and with good reason—that in the present building the great attractions and facilities for out-of-town members ought to enable the club to accomplish that purpose in a much larger way, to demonstrate much more clearly than ever before that its real object is to promote the interests of Yale in the largest and best sense. And so we gain a clear idea of the purposes this building expresses. We find that diligence has been exercised in giving to an enormous club-house—with all features and conveniences of the most up-to-date club-houses—the characteristics of a somewhat homelike centre of Yale graduate activity and influence.

The desire to make this the national centre of Yale graduate influence explains the choice of location, directly on the line between cities in all parts of the South and West and the university at New Haven. It explains also the great number of bedrooms and, of course, the corresponding amplitude of assembly rooms. In other words, it supplies justification, if justification is required, of the great size of the building—which is sometimes spoken of as the largest club in the world. But we prefer to speak of quality and real adaptation to the purposes outlined rather than mere size. The principal features of the interior are as follows: On the first floor we find the broad, low-ceiled entrance hall, like an English basement, the office, an exceptionally large cloak-room, telephone booths, elevators, etc. There is access to this floor not only by way of the main entrance (in Vanderbilt Avenue) but also from the subway and that part of Grand Central Station which extends below Vanderbilt Avenue. Arriving by train, one enters the club without leaving cover. The service entrance is in Forty-fourth Street, and all service departments are in the western portion of the house, with a separate elevator system. The second floor is reached either by elevator or a very easy and short flight of steps. Here we enter the very large, high-ceiled living-room or "lounge"—in simple truth a splendidly big room, yet not unhomelike; rather like a large-scale replica of some room in a private house, half remembered, or—in the Palazzo Massimi at Rome (one conjectures); and that palace did, indeed, supply a model for the treatment of this part of the interior. The "lounge" has nine windows in embrasures so deep they might almost be called alcoves. The grill-room is on the second mezzanine; the billiard-room on the third floor; the library on the fourth; Turkish bath, swimming pool and locker-room on the fifth; gymnasium and squash courts on the sixth; bedrooms in undisputed control of all the floors from the seventh

Typical Bedroom Floor.



DETAILS OF EXTERIOR—YALE CLUB, NEW YORK. JAMES GAMBLE ROGERS, ARCHITECT.

RECEPTION ROOM—YALE CLUB, NEW YORK.
JAMES GAMBLE ROGERS, ARCHITECT.

MAIN STAIR—YALE CLUB, NEW YORK.
James Gamble Rogers, Architect.

to the seventeenth inclusive. Here let us say that the aim of the architect and building committee has been to make the bedrooms sanitary and not unreasonably expensive, giving to them the simple and modest atmosphere of the old colonial homes. Private dining rooms are on the eighteenth floor; a rather marvelously modern kitchen on the nineteenth; the restaurant (the main dining-room) on the twentieth; the wine "cellar," together with storage rooms, etc., on the twenty-first; above that still, the roof-garden and (with nothing but one higher building to obstruct it) the superb view over all the island, the rivers, the surrounding country.

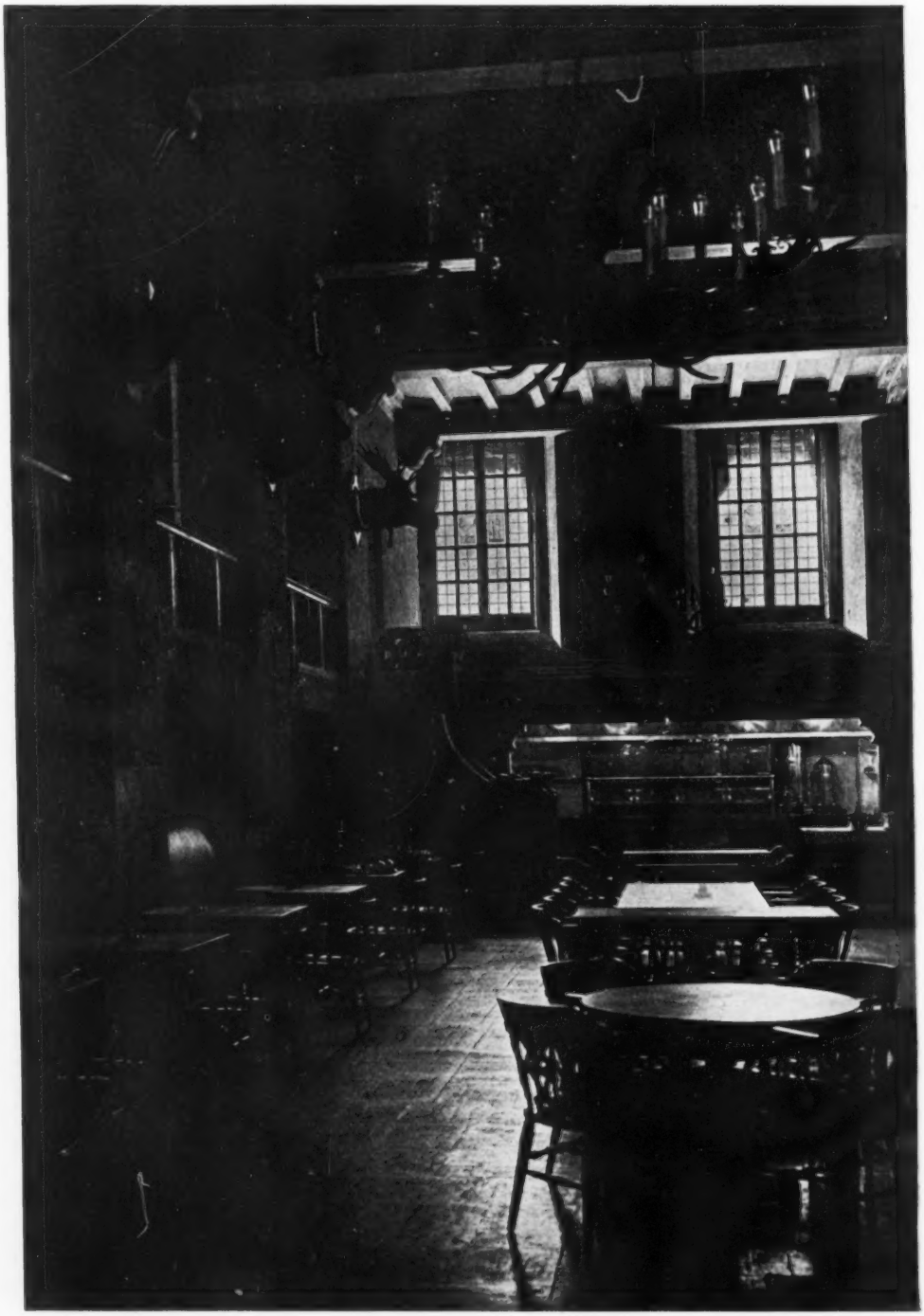
The view from this roof-garden, as one looks out toward the north, includes both the East and North Rivers, extending also over Central Park to the hills beyond the northern confines of the city; on the south it includes all three of the great city towers; on the east, extending over Long Island indefinitely, its boundary is lost in haze; on the west it is clearly bounded by a range of hills not less, apparently, than twenty miles beyond the Hudson and the Palisades. And the central point in and of the view—if you stop to think, part of the view itself—whichever way you turn, is this flat roof which is to be the garden. Two-thirds of the space here is devoted to open terraces (on the east and south), and in addition there is a large enclosure with glass doors which can be thrown open in hot weather.

Now, if you should go directly from the roof to the fourth floor, you might enter a room extending along the entire eastern front of the building, from elevators and stairway to the Forty-fourth Street façade. There are small balconies outside of the eight windows, and at the farther end of the long room a corner that may become famous—almost certainly will be found to be delightful. I refer to the south-east corner, somewhat less than one-sixth of the entire room, which is set apart, as it were, from the rest of the library, such partial separation being indicated by columns and by an open fire that looks across this snug

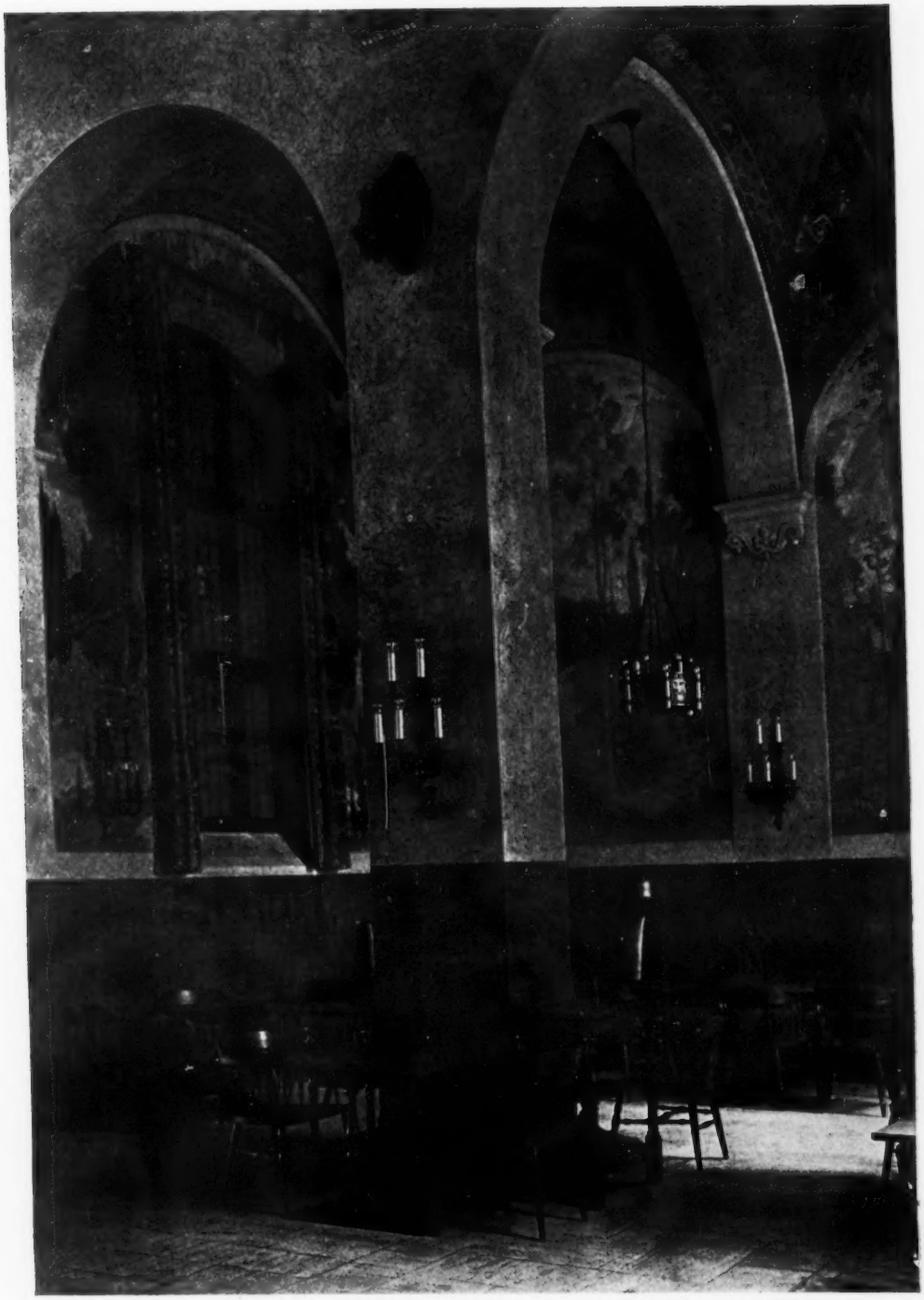
ENTRANCE LOBBY—YALE CLUB, NEW YORK.
JAMES GAMBLE ROGERS, ARCHITECT.

LOUNGE (NAMED "SOCIAL HALL" ON THE FLOOR PLANS, PAGE 314)—YALE CLUB, NEW YORK. JAMES GAMBLE ROGERS, ARCHITECT.

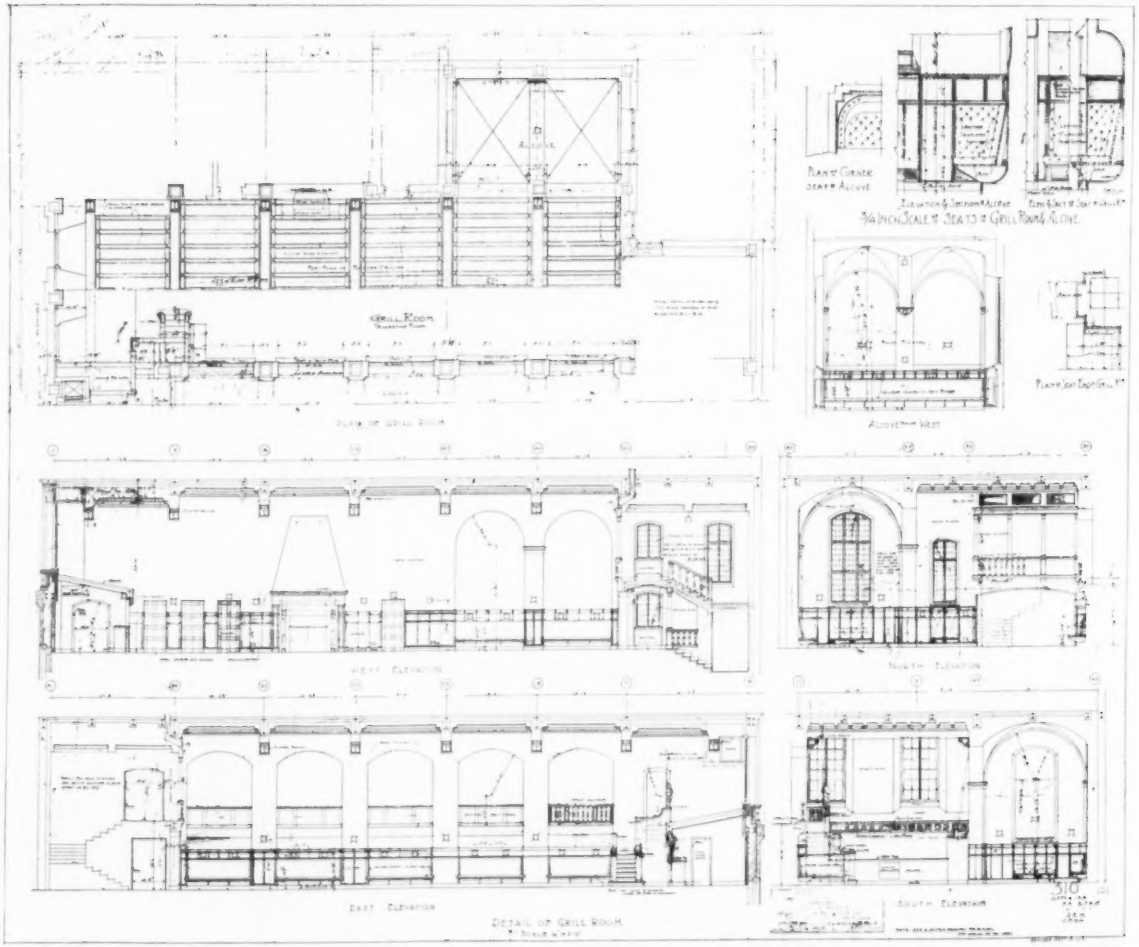
DETAIL OF LOUNGE—YALE CLUB, NEW YORK. JAMES GAMBLE ROGERS, ARCHITECT.



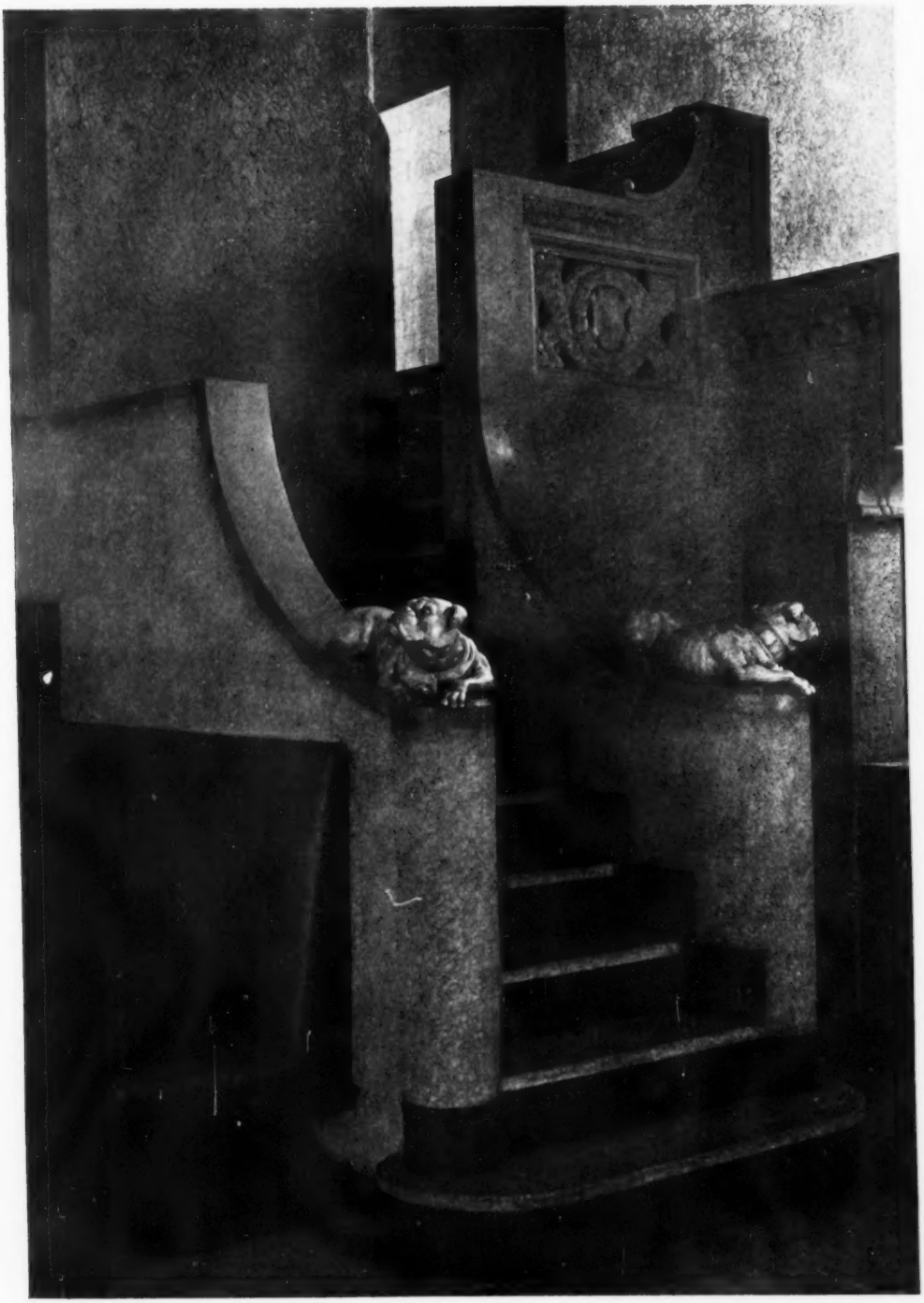
GRILL ROOM—YALE CLUB, NEW YORK.
JAMES GAMBLE ROGERS, ARCHITECT.



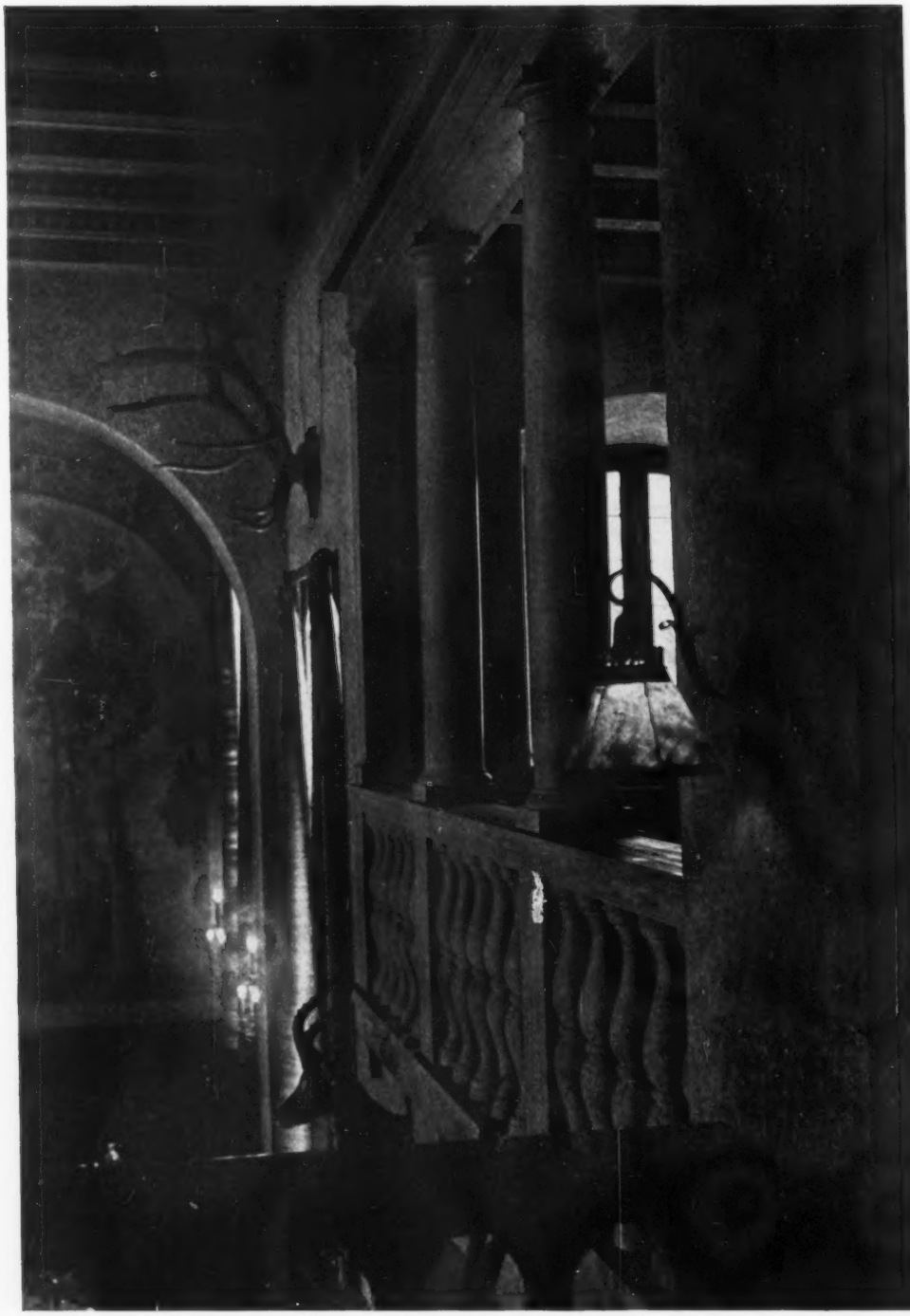
ALCOVE IN GRILL ROOM—YALE CLUB, NEW YORK. JAMES GAMBLE ROGERS, ARCHITECT.



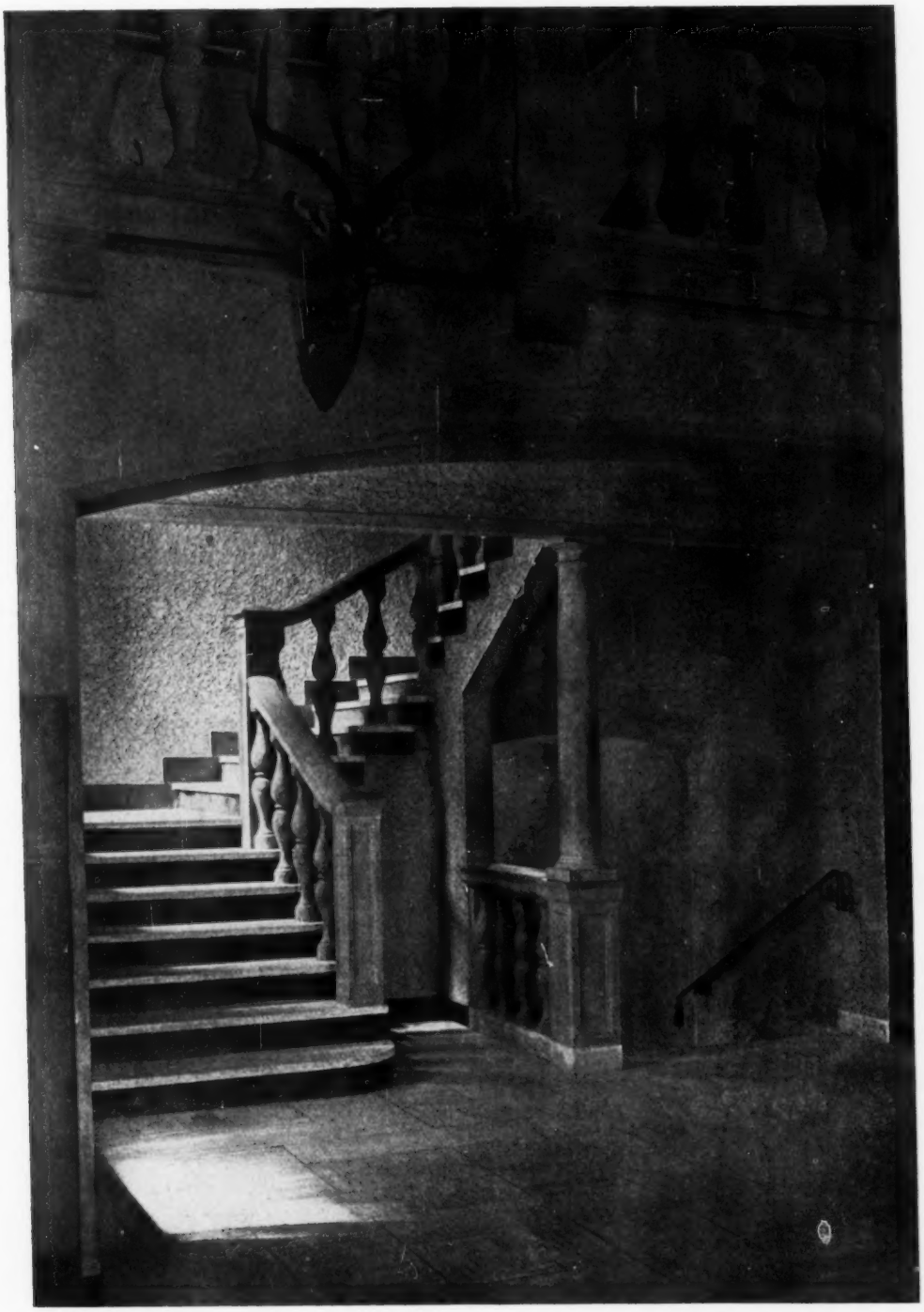
DETAIL OF GRILL ROOM—YALE CLUB, NEW YORK. JAMES GAMBLE ROGERS, ARCHITECT.



STAIRS TO LOGGIA IN GRILL ROOM —YALE CLUB, NEW YORK. JAMES GAMBLE ROGERS, ARCHITECT.



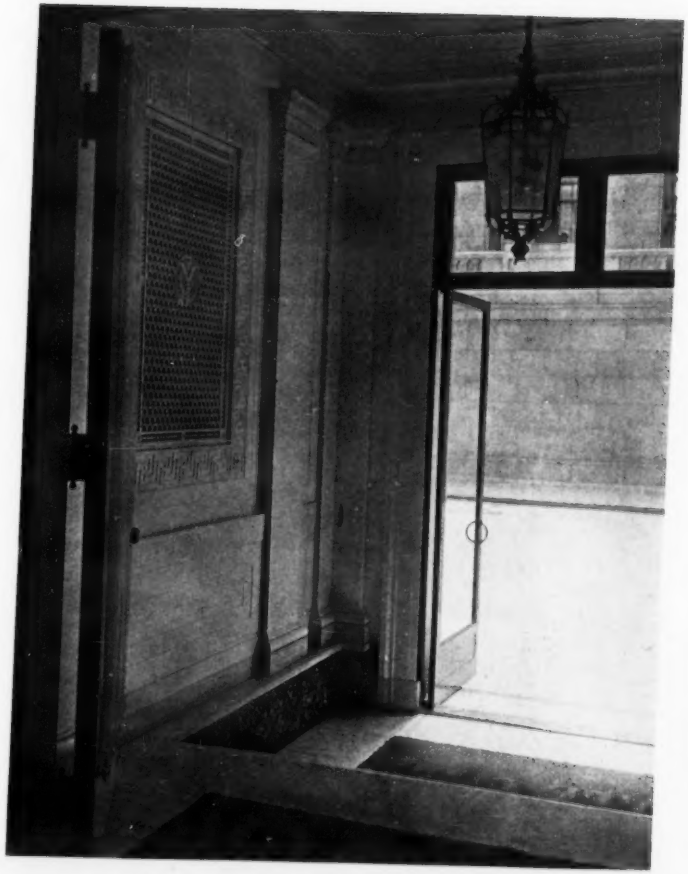
BALCONY IN GRILL ROOM—YALE CLUB, NEW YORK. JAMES GAMBLE ROGERS, ARCHITECT.



STAIRS FROM GRILL TO BILLIARD ROOM—YALE CLUB, NEW YORK. JAMES GAMBLE ROGERS, ARCHITECT.

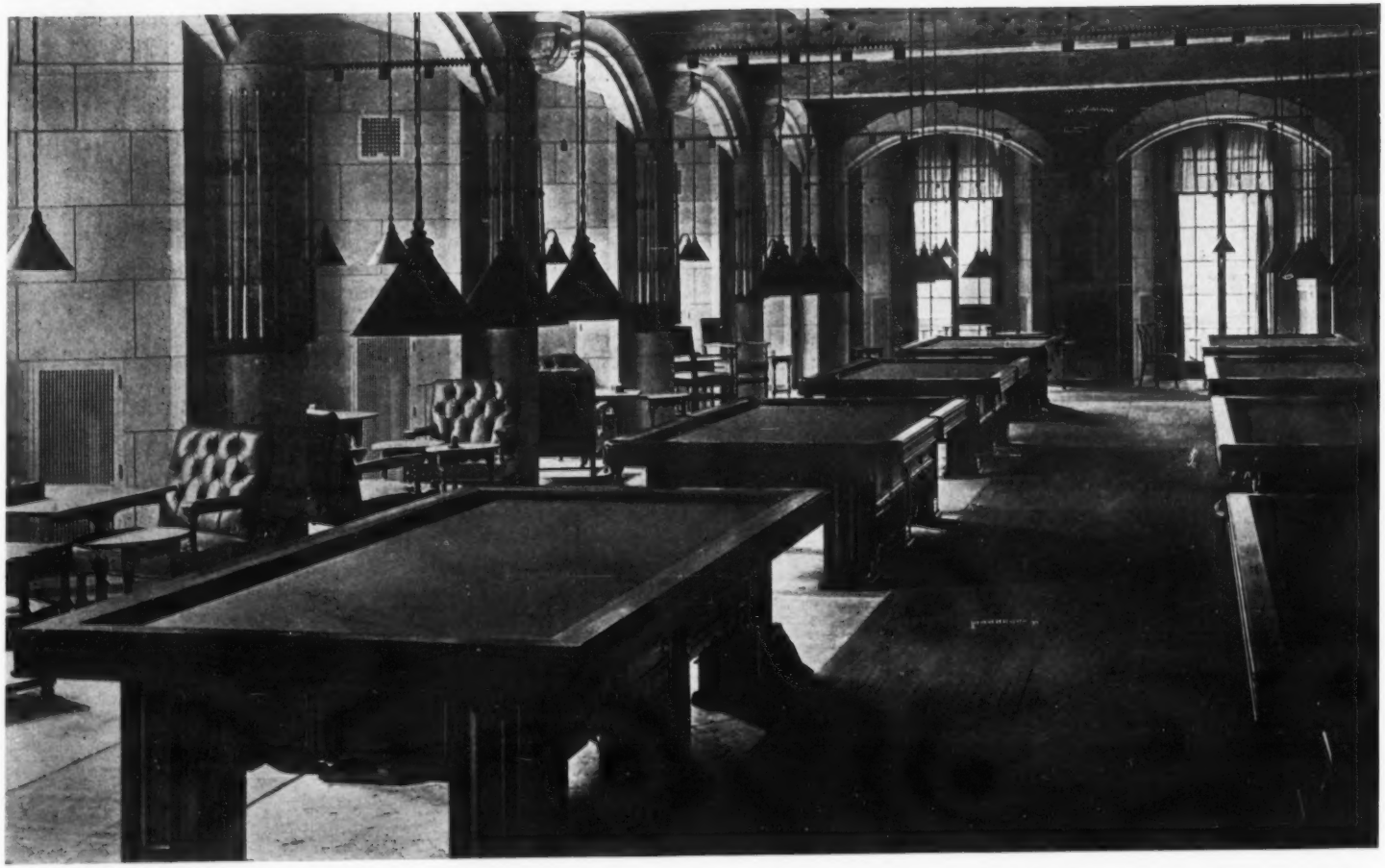
LOGGIA OF GRILL ROOM—YALE CLUB, NEW YORK
James Gamble Rogers, Architect.

CORRIDOR ON FOURTH FLOOR—YALE CLUB, NEW YORK.
James Gamble Rogers, Architect.



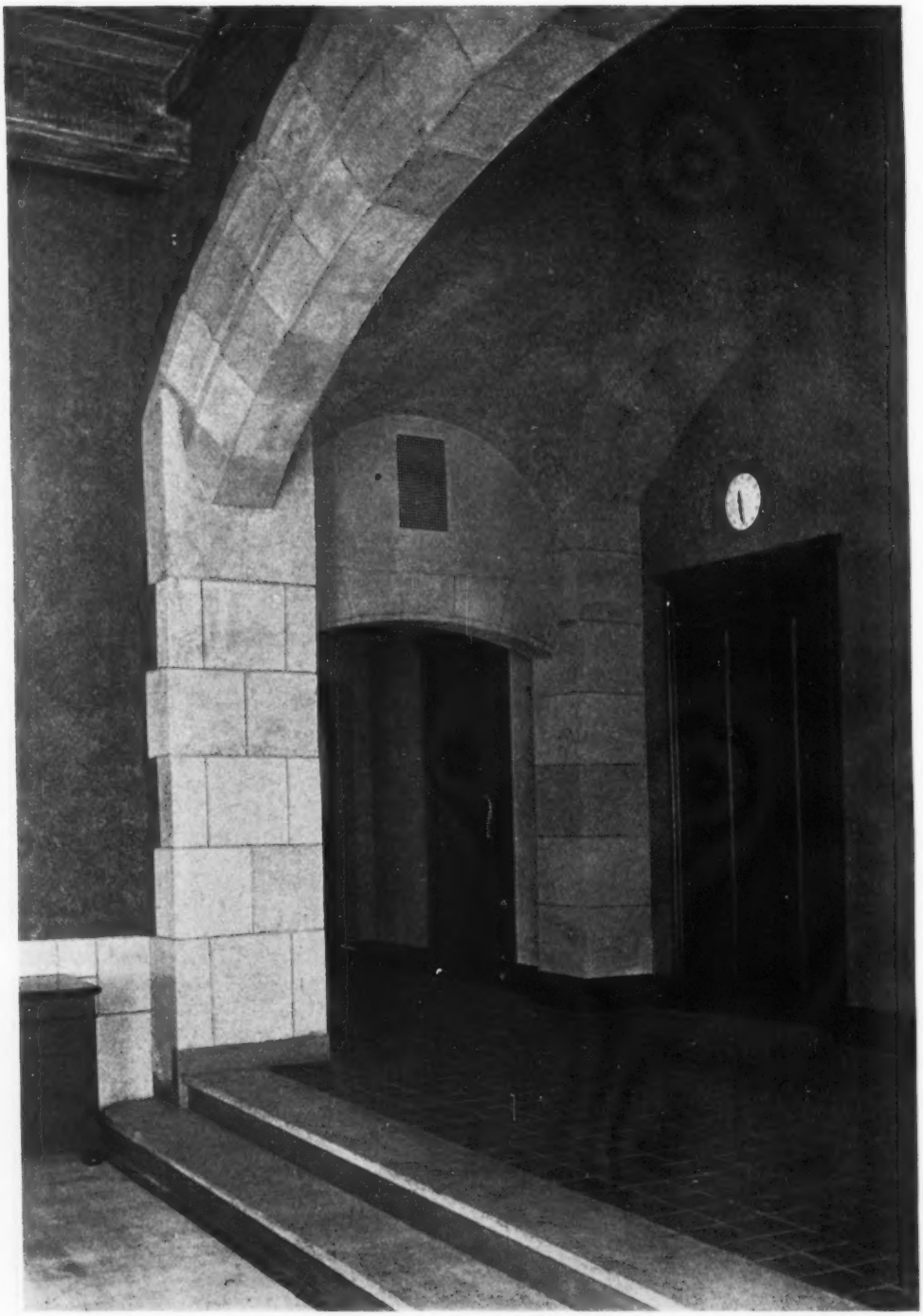
ENTRANCE VESTIBULE—YALE CLUB, NEW YORK.
James Gamble Rogers, Architect.

DETAIL OF GRILL ROOM—YALE CLUB, NEW YORK.
James Gamble Rogers, Architect.



BILLIARD ROOM—YALE CLUB, NEW YORK.
JAMES GAMBLE ROGERS, ARCHITECT.

LOOKING FROM BILLIARD ROOM TO GRILL—YALE CULB, NEW YORK. JAMES GAMBLE ROGERS, ARCHITECT.



LOBBY OF BILLIARD ROOM—YALE CLUB, NEW YORK. JAMES GAMBLE ROGERS, ARCHITECT.

CORNER OF READING ROOM—YALE CLUB, NEW YORK. JAMES GAMBLE ROGERS, ARCHITECT.

THE LIBRARY—YALE CLUB, NEW YORK.
James Gamble Rogers, Architect.

end. A reader, it would seem, might rest, facing the open fire, or the mantel, which is of an interesting and original design, and so, with good light from the window at his left and from the window behind him, might actually *read*—or talk. Otherwise, the succession of quiet and secure alcoves in the much larger part of the room provides a vista that may be fancifully likened unto the views up there on the twenty-second level; and on the well-planned shelves in those alcoves our reader may discover, some day, all the best things—the only things you can always, directly and readily, go to after looking at and thinking about those views over New York, without an intellectual, as well as a physical, drop. Excellently sketchy are the low-reliefs on the vaulted ceiling. On the ceiling above the ingle, an appeal to sentiment by evocation of the Old Brick Row; but, above the alcoves, very decorative small figures reminding us of designs Roman and Pompeiian. No strong colors are used in the decoration of these walls; nevertheless pure white, the real white, has been rejected in favor of carefully chosen subdued tints.

And this is the rule throughout the building. Exceptions are the dining rooms, general and private, and the billiard and grill rooms. The walls of the private dining rooms especially, here and there, in vivid coloring not less than the emphatic (in a single instance even labored) drawing of the designs, challenge attention peremptorily. The principle of art-criticism that applies to this matter can be clearly stated; and it seems best to enforce it by means of citation from a book written in defence of the free and liberal employment of colors on interior and exterior surfaces. "Perhaps the Italian architect, Palladio, who flourished in the sixteenth century," says Mr. Ward in his work on *Colour Decoration of Architecture*, "was really more responsible than Puritanism for the fashion of colourless buildings, for he was one of the first who regarded colour as an evil thing, as he has said that 'white was more acceptable to the gods' . . . Much as we all love colour we seem to

SMALL CARD ROOM—YALE CLUB, NEW YORK. JAMES GAMBLE ROGERS, ARCHITECT.

CARD ROOM—YALE CLUB, NEW YORK.
James Gamble Rogers, Architect.

be afraid to get too far away from white, or very pale and neutral tints, in decoration. We appear to be too timid, or anxious not to offend the Palladian taste of the public. . . ." Palladian taste prevailing in other parts of the building, such revolt against it as these walls declare might naturally be expected to challenge attention by striking contrasts, as we have said; and reconcilement of the hostile extremes may be effected, we think, not by the softening touch of the hand of time alone. In the grill-room, by way of compensation for the absence of windows, the idea of space, or breathing-space, is suggested by large paintings of Neapolitanesque landscapes which are, of course, to be regarded as decorations merely. This is an absolutely correct device; and the same thing is true in respect to the space-adding quality of the ceiling—unquestionably the conventionalized pergola, I should say, though remotely derived.

The club rooms are interwoven in such a manner as to give them the greatest unity possible. Thus, from the ground floor you go up a one-half flight to the general assembly room, known as the lounge; then one-half flight to the grill-room, and one-half flight to the billiard-room. The library is not quite taken into this intimate system for the obvious reason that it, as the literary and scholarly centre of the club's life, should, of course, be a little more secluded and withdrawn.

And now we shall round out our view of the building by considering, as we have promised, some of the peculiar architectural problems and their solution—the difficult questions that arose when the task of planning its construction was resolutely undertaken; at this point dismissing with a word the obligation, ever a matter of course in a club of this kind, to keep considerately in view the practical side, all that makes for efficient and economical maintenance, and not less considerately to keep in view the demand that the house should be an artistic production and a scholarly piece of work.

Well, then, we mention first a difficulty of construction on this particular lot due to the fact that there are two

MAIN DINING ROOM—YALE CLUB, NEW YORK.
James Gamble Rogers, Architect.

stories of railroad tracks running under the building and for this reason the columns supporting the club could not be placed where the requirements for the building called for them, but had to be so placed that they would not interfere with the clearance requisite for railway trains. Moreover, the vibration from the railway trains had to be avoided. This was done by having the columns of the building go clear to the ground without using the columns of the railroad structure.

The Grand Central Terminal property in that vicinity is built up on steel columns and steel beams, and it can readily be understood that, with the expansion and contraction of steel, there have to be expansion joints every short distance, allowing for the change in dimensions caused by the changes in temperature.

On inspection, you will notice that at the bottom of the club-house there is a ¾-inch space of mastic material, just a few inches above the sidewalk. The sidewalk can move independently, so to speak, inasmuch as the movement is taken up in this mastic material. Again, the front of the building is carried on columns five feet seven inches behind the façade—that is, inside the building—and the movement of the building is independent of that of the sidewalk.

Other difficulties of construction are caused by the inherent nature of a club building of this size. We have to deal here not only with an extensive system of small rooms, used for bedrooms and minor offices, but also with a number of large assembly rooms to accommodate at one time many people. These large rooms, to be effective, had to be without columns. This necessitated tremendous spans, carrying the superstructure. The spans are themselves carried on beams and girders, those of the basement being about eleven feet deep.

In the category of difficulties it is natural to place a regulation of the New York Central Company applicable to all buildings of the group on the company's property near the Grand Central Station. In view of this regulation it is necessary to say that entire freedom was not granted to the architect in regard to such

PRIVATE DINING ROOM—YALE CLUB, NEW YORK.
James Gamble Rogers, Architect.

important matters as the height of the structure, the material to be used, etc. On the contrary, his talent was exerted to effect a successful accommodation of an ideal design, or, let us say, a compromise between the ideal and prescriptions as to material and the maintenance of a certain cornice-line—the regulation calling for a well defined cornice at a level of about eighty-one feet above the street. Now, beyond all question a part of the "spontaneous and free expression" was sacrificed; yet we must not for that reason make haste to assert that the Guadet principle, "Art has the right to be free," has been violated. No, it most positively has not. That fraction of the "liberty" commended by the distinguished French teacher which has been surrendered is exactly the fraction which is to be serviceable in a vastly greater design. Looking forward, we appreciate the Yale Club building as a well-designed part, eventually a very small part, of an architectural unit that may prove to be of the very first importance in the harmonious development of this section of the city. The regulation we have mentioned is apposite not only to buildings adjoining the terminal but apparently to the entire group of buildings on New York Central land in that vicinity. When this group is finished it will probably be the best and most potent example in our country of the good effect an all-embracing regional design can have, when it works out brilliantly; thus showing other American cities the advisability of attempting, at least, to secure the kind of architectural dignity that is unfortunately seldom found in the avenues where our most expensive and individually beautiful buildings are located.

And now a word touching the execution of the work.

Contrary to the recent practice of having competition for buildings in which there is such a diversity of interests as in a club-house, the building committee decided, after considering the matter thoroughly, to have no competition, but to investigate with due care and to select an architect who could best handle this problem. Not only did they dispense

LARGE PRIVATE DINING ROOM—YALE CLUB, NEW YORK. JAMES GAMBLE ROGERS, ARCHITECT.

BEDROOM—YALE CLUB, NEW YORK.
James Gamble Rogers, Architect.

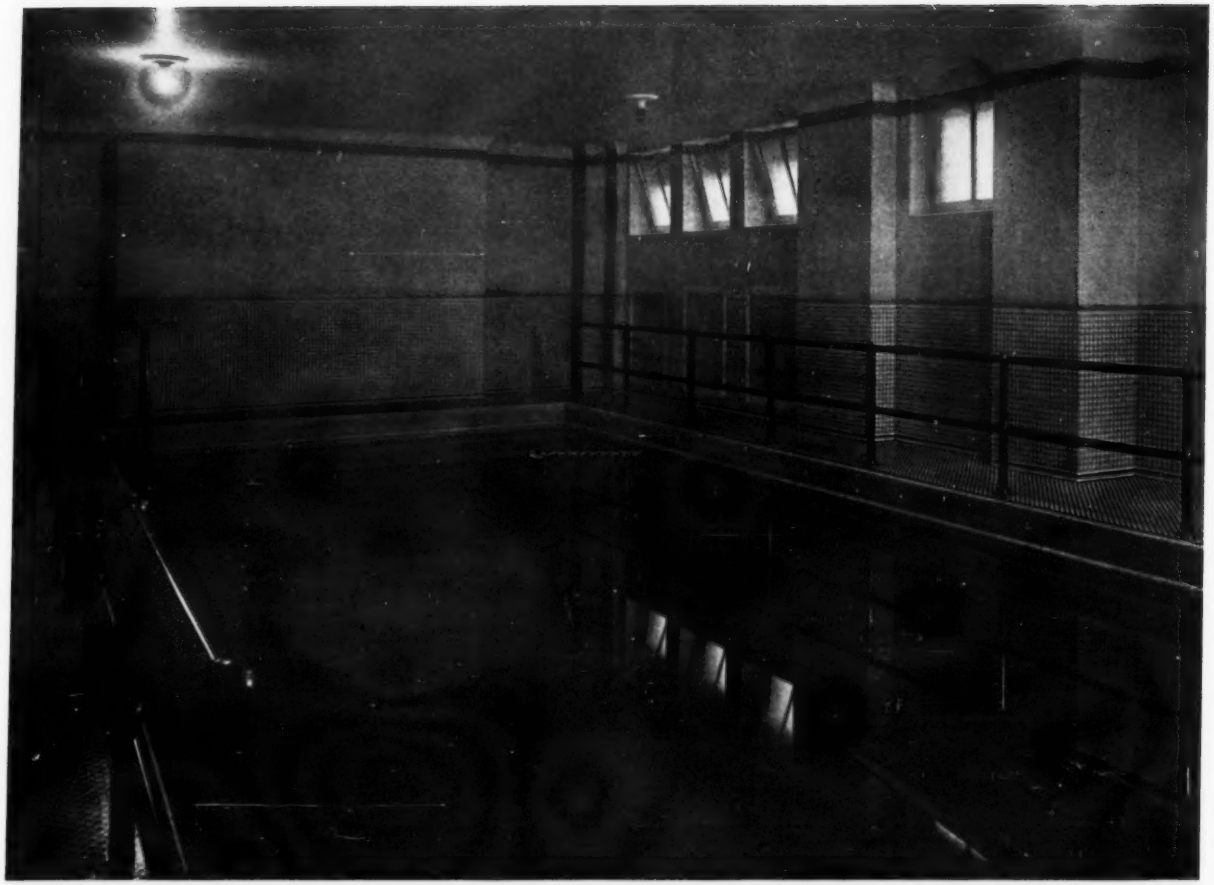
with competition in regard to the architect, but also in the choice of the contractor. This was done because the committee believed that this method would save time, save money, and, as tending to favor good team work by the architect and contractor, produce a better building. In point of fact, co-operation between builder and architect has existed from the beginning of this enterprise.

The members of the committee feel that their expectations have been realized.

Even before the plans were made, committeemen, when they first decided to build, had regular weekly meetings at which all questions were brought up and the most important matters decided. This arrangement prevented delays, which so often occur when meetings are infrequent, and enabled each member of the committee to present his own views on every question "without fear or favor," that is, with entire freedom; and to the liberty granted to individual suggestion and initiative the unconventional or free treatment of some details of the interior fairly corresponds.

There arose, naturally, a great many unusual questions. The planning of a club-house of this size is complicated, and presents a problem which is two-sided. On one side is the problem of the large, modern, fireproof building that should be handled in a broad way, as such buildings require; on the other hand, the individual and residential touch that has to be given to every part of the club. The latter can be given only by dint of such painstaking, even meticulous, attention as is required in the arranging of the details of a family residence. The endeavor has been to achieve a homelike atmosphere, although the large size of the building necessitated a solution really on a monumental basis, which had to be reduced in scale by home touch; to make not a club-house merely for the New York graduates, but really a home in the metropolis for all the Yale visitors: in other words, not the Yale Club of New York, but THE YALE CLUB.

To accomplish this, of course, there had to be a large number of rooms for graduate visitors. Now, it may be conceded that ample provision for non-resi-



SWIMMING POOL—YALE CLUB, NEW YORK.
JAMES GAMBLE ROGERS, ARCHITECT.

dent graduates would have been made if the committee had placed a club-house on the corner, and, on the adjoining lot, another building containing the necessary rooms, with a separate entrance for those using the rooms. This, however, would have necessitated a duplication of the managing force, and it would not have given members any equivalent for the light, large and beautiful rooms in the upper portion of the building, for the fine views, or for the roof-garden, high above all noisy and smoky levels.

The choice of site was made after long consideration as to the locality that, for the greatest number of members, would be most convenient; there appears to be, therefore, excellent ground for the hope that Yale men from out of town who come to New York will have a place where they can meet old friends and renew their interest in the old associations.

In conclusion, a few notes illustrating the plan of construction.

It was figured that only two service elevators would be required for the service personnel of the club, yet a third elevator was added, in that western end of the building. At the opposite (northeast) end, the passenger elevators for members are situated. In case of panic caused by fire—which would, by the way, be harmless in such a building—the group of elevators in the opposite end of the house could always be used.

This building is as fireproof as a building can be made. With the exception of the wood floors in the dining room and lounge, there is practically no wood in any part of it, other than the furniture. The floors throughout are of marble, terazzo, tile, or cement. The trim around the doors in all cases is made of steel, and in many cases the doors also are of steel. Throughout the service departments (concentrated near the service elevators) moldings are eliminated, and the finish is "hospital construction" of the most modern type. This not only prevents accumulation of dust on the moldings, but also facilitates cleaning and maintenance.

In order as nearly as possible to approach (we do not say attain) the residential appearance, by any lawful modification of the exterior, it was decided to reduce the scale of the building by diminishing the size of the window openings. It is interesting, for this reason, to compare the window openings of the club with those of the adjacent buildings. The club's are smaller, indeed, and yet on examination it will be seen that they are in reality of ample size.

There is no feature of the new Yale Club-house that has not been passed upon by at least two outside experts, selected as the best men in their professions or business, and, moreover, every plan has been passed upon, with reference to its utility, by both architect and builder.

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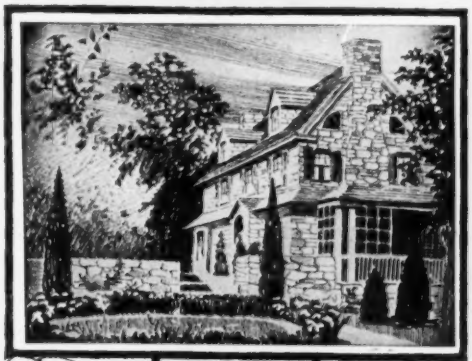
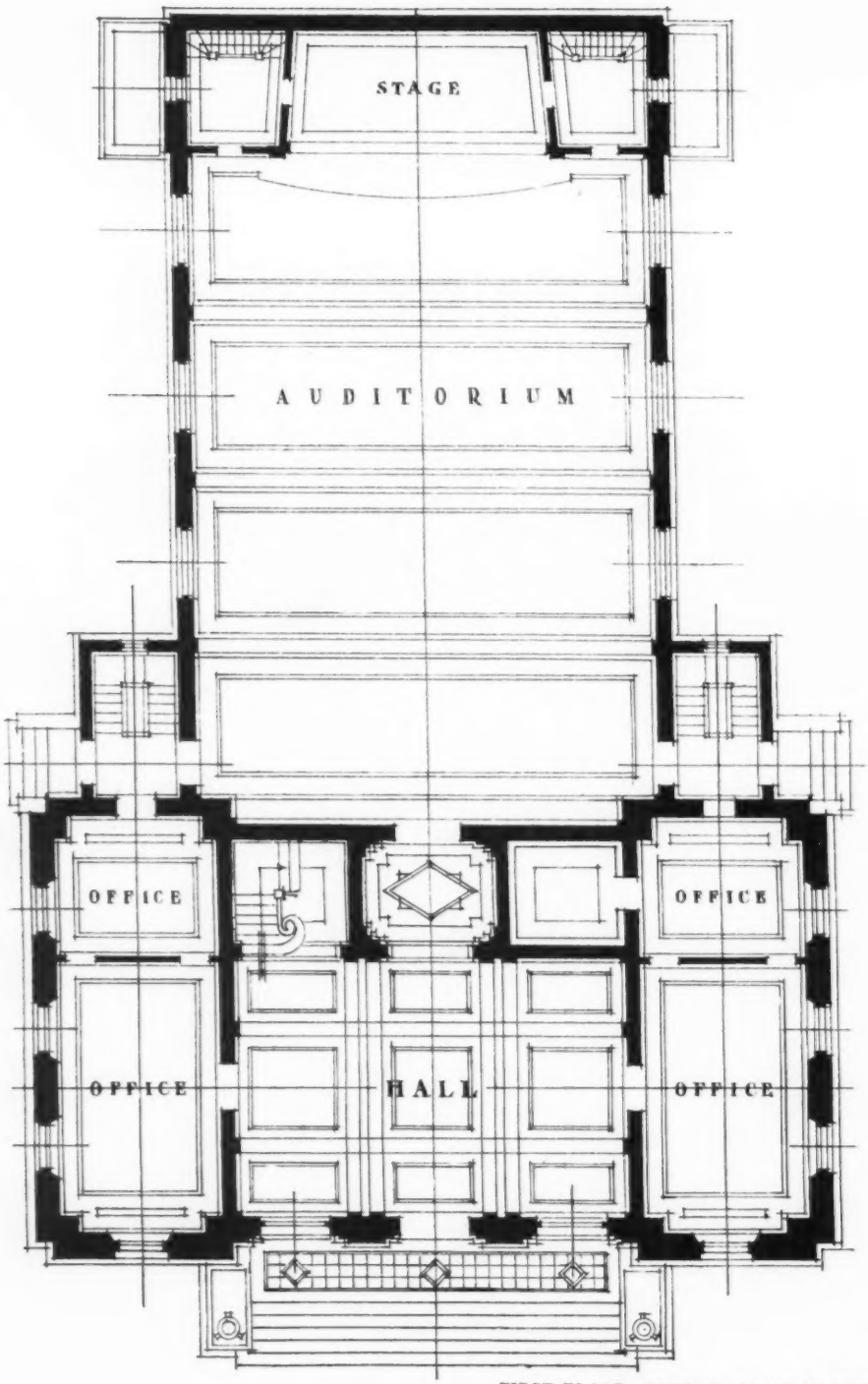
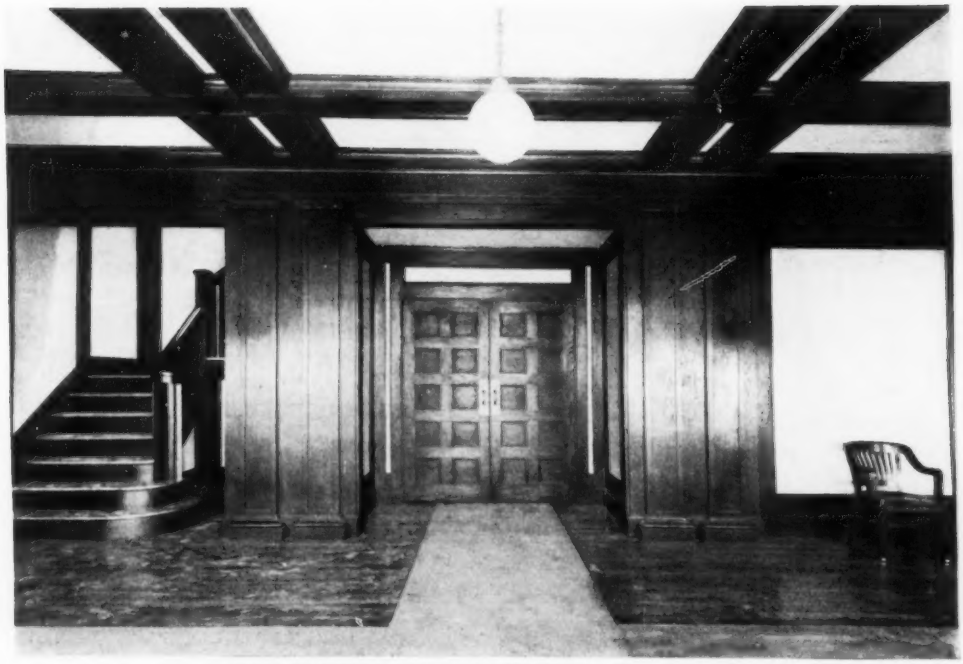


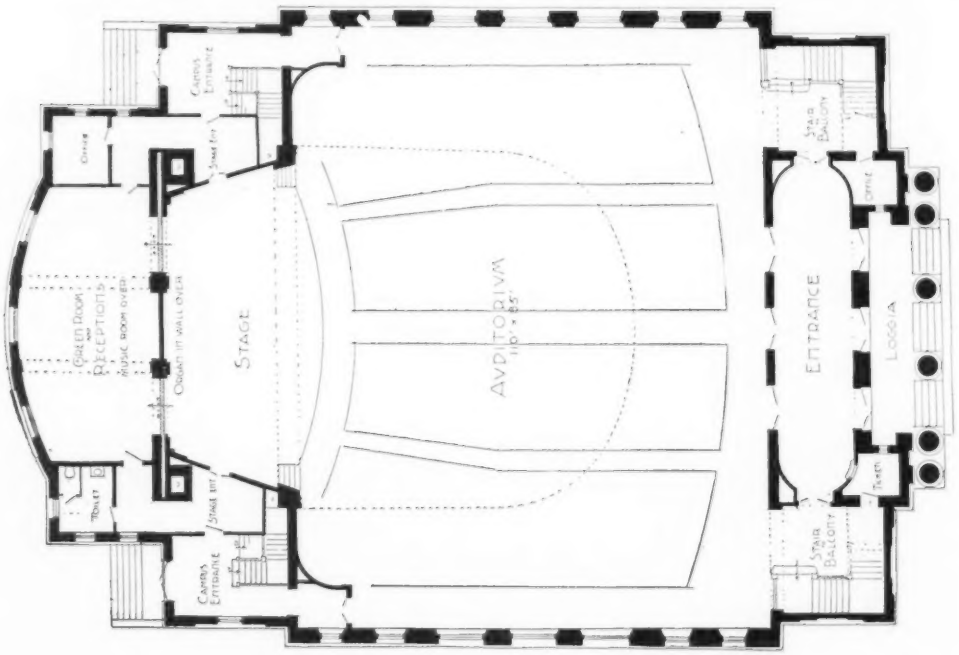


FIRST FLOOR—TOWN HALL AT BOURNE, MASS. JAMES PURDON, ARCHITECT.

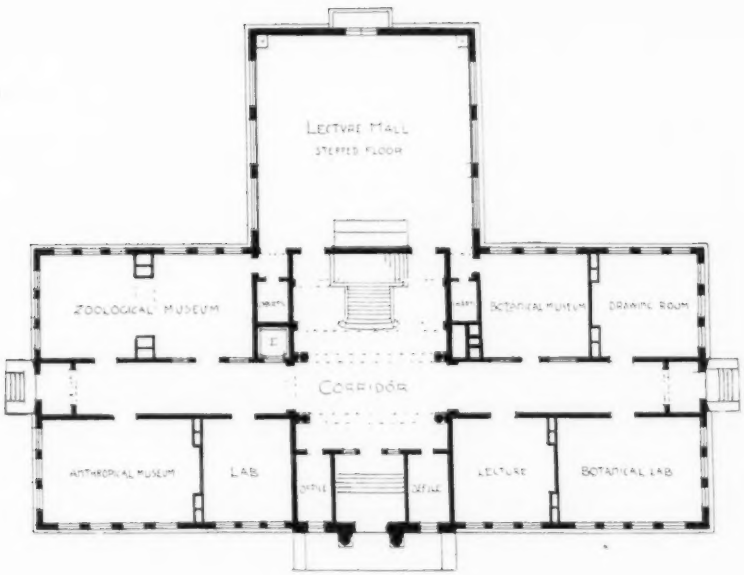
TOWN HALL AT BOURNE, MASS.
James Purdon, Architect.



ENTRANCE HALL IN TOWN HALL AT BOURNE, MASS.
James Purdon, Architect.



GREEN HALL AUDITORIUM—SMITH COLLEGE, NORTHAMPTON, MASS. CHARLES A. RICH, ARCHITECT.



SMITH COLLEGE LABORATORY, NORTHAMPTON, MASS. CHARLES A. RICH, ARCHITECT.

RESIDENCE OF HOWELL LLOYD, ESQ., VILLA NOVA, PA. BAILY & BASSETT, ARCHITECTS.

A Seventeenth Century New England House

By D. Millar

AT Topsfield in Massachusetts, not far from Danvers and historic Salem, is one of the best preserved houses of the earlier Colonial period. Built in 1683 by the Rev. Joseph Capen, minister of the Topsfield church during the witchcraft delusion, it now belongs to the Topsfield Historical Society, for whom it was carefully restored by George Francis Dow, Secretary of the Essex Institute of Salem, who is a resident of Topsfield.

Georgian architecture of the later provincial period is fairly well known to most people, but houses built as early as this in the olden days of the "Colony of Massachusetts Bay" differ so radically in arrangement and construction from those of the later period that a study of this excellent specimen cannot fail to be of interest.

The little band of Englishmen who arrived at Salem in 1628 and laid out the first streets of that famous town no doubt at first were content to dwell in the simplest manner in houses of rudest construction, but with settled conditions larger buildings were erected. These were nearly all built according to one plan. So much alike are these old wooden houses that remain that one would fancy for them a common inspiration. Probably necessity and economy of materials and labor dictated the plan which could not have been much simpler. In the centre was a great "stack of chimneys," as old records phrase it, on either side of which was a room, with a narrow entry in front of the chimney stack between the rooms. In this entry was the staircase. Four rooms and an upper and a lower entry was all the accommodation afforded, but the rooms were large and must have been more comfortable than people now imagine. All through the Massachusetts and Plymouth Bay colonies as well as in the Connecticut settlements this one plan persisted. In Rhode Island the houses were usually of one room and entry on each floor—half the size of the Massachusetts type just described. Besides these wooden houses there were numbers of stone and brick houses of a different plan, but these are outside the scope of this article.

In nearly every case the house faced south, with the "hall" or general living-room, dining-room and kitchen combined, on the east, and on the opposite side was the "parlor," a room which served for retirement, and for the entertainment of special guests. In practically every case, such being the custom of the time, the parlor contained a bedstead. In each room a great fireplace held a roaring fire of logs in its cavernous depths, and on the second floor the two "chambers" had smaller fireplaces though these were sometimes lacking.

The framework of these houses was usually of oak, though sometimes, as in the Ward house in Salem, the frame was of pine, made of heavy timbers mortised and tenoned together and held in place by wooden pins. Their joints were hewn with much skill by men who built according to the manner of their trade learned in England, and who worked as their medieval forefathers had done. The foundation timbers rested on underpinning of fieldstones, laid without mortar. These timbers were called the "sills." At the four corners were posts, two at each end of the house, two in the rear wall beside the chimney, and two more in the front wall at the entry —as will be seen by a glance at the accompanying diagram. Across the house

at the level of the second story were framed the girts—usually six in number—on sides and ends and also the two flanking the chimney.

Spanning the rooms were other girts called "summer"* beams. In the Massachusetts Bay colony these usually ran north and south from the front to the rear girts, but in the Plymouth and Connecticut settlements they commonly ran from the end girts to the chimney girts. Into the upper parts of the summers and the girts the joists of the floor were mortised, and they supported the boards of the floor above. Early roofs were steep in pitch (in this house the pitch is fifteen inches to the foot) and very simply framed. The boarding under the shingles ran up and down instead of across the rafters as at present.

One of the most noticeable features of these old houses is the overhang of the second story on the front, and often on the ends also, and the third floor overhang of the gable ends. The overhang is a form of timber construction common in old English work and seems to have been done solely for its architural effect.

Overhangs were constructed in two ways. The "framed" overhang was the older form in the colonies, and is the one illustrated here. The other form was the "hewn" overhang where the posts were very large and the lower part was hewn away so that the face of the first story wall receded several inches from the face of the second story wall. Gables on the front of the house were found only in Massachusetts colonies and in Rhode Island. They were unknown in Connecticut. Anyone desirous of seeing a house with such gables should visit the old Ward house in the grounds of the Essex Institute at Salem.

The accompanying illustrations show the front and end overhangs clearly, together with the ornamented ends of the second-story corner posts in front, which terminate in hewn "drops." Beside the front door and under the gables are brackets that support the overhangs. Usually the ends of the front and rear topmost girts (known as the "plates") which support the rafters are supported by brackets but in this house their place is taken by drops, which are here no longer parts of the frame, but merely ornaments.

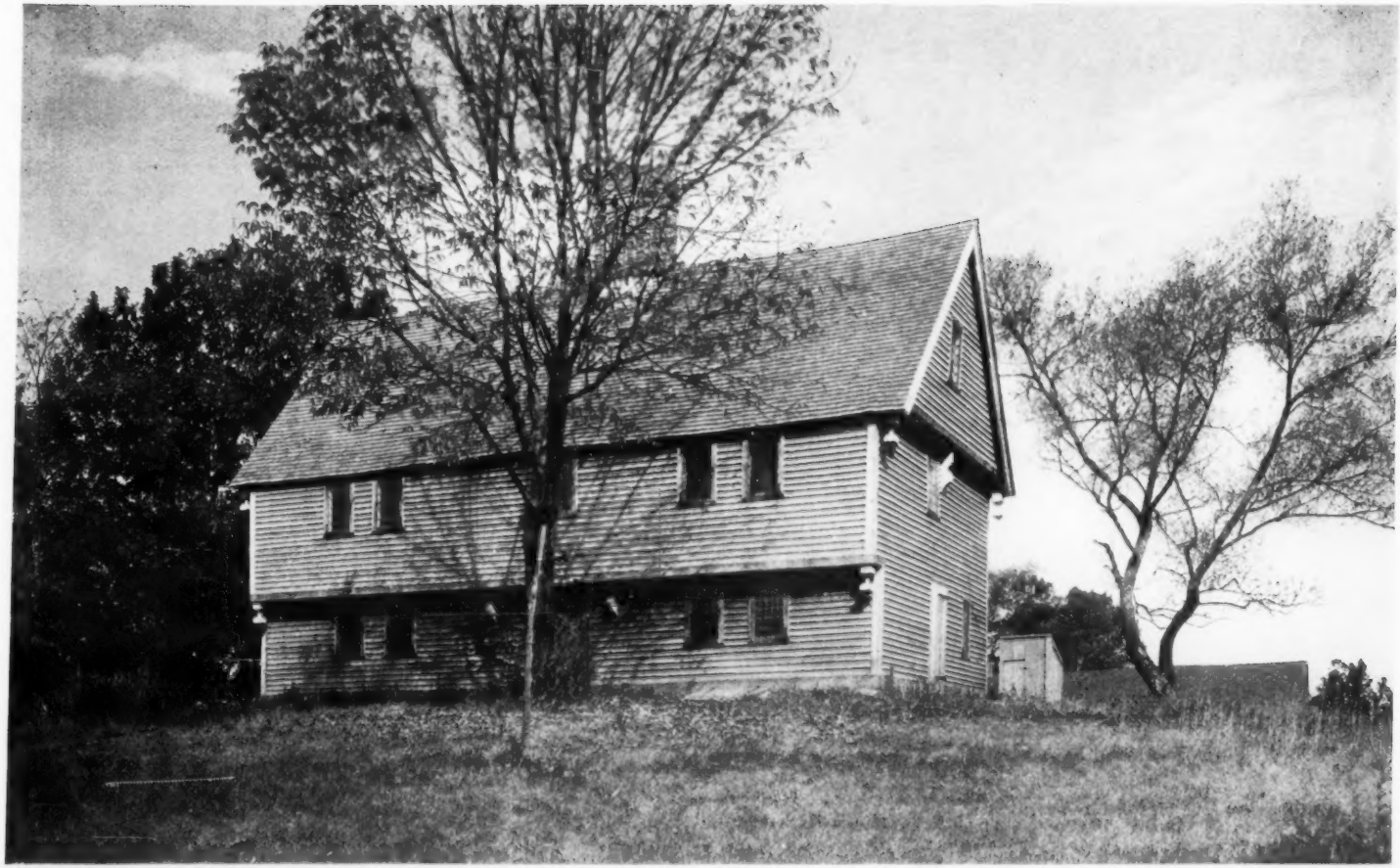
The top of the chimney is a copy of that of the old Hunt house in Salem, which was erected some twenty years earlier than this house. This restored top, owing to a mistake of the bricklayer, is too thin, but gives the right effect when seen from the front. The windows are the exact size of the originals and have been restored with casements with square glazing rather than the more common lozenge shape. The front door is studded with nails in a diagonal pattern like the "Indian door" preserved at Deerfield, Mass., and the iron latch ring is also a reproduction.

The view of the entry shows the staircase with its original newel and turned balusters of oak. It will be noticed that the brick work of the chimney is exposed—a sure sign of early work. The framing of the floor joists can be seen also and the floor of the entry is some inches lower than the rooms.

In the parlor may be seen the rather rare feature of two summers. The walls are plastered, a sign of wealth on the part of the builder, and on either side of the fireplace may be seen doors to the closets. Some of the chairs in this room are old, but the table and fine oak chest are copies of originals of the period of the house in the museum of the Essex Institute. Under the ends of the summers at the left of the picture is incised with a chisel the date "IUN Ye 8TH 1683"—so there exists here what is not to be found elsewhere in so old a house, the exact date when the frame was "raised." The chamfering of the summers is plainly seen,

In the old "hall" is another large fireplace with its trammel bar (an arrangement earlier than the crane) holding pots and kettles. On the right is the doo. to the oven. The old settle with its low table and cider mug suggest "solid comfort." The walls of the hall are finished with the common finish of early days, broad horizontal boards with

*From the Latin sagmarius—the root of sumpter, a pack-horse, because they bore the weight of the floors.



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DROP, OVERHANG AND CASEMENT WINDOWS—CAPEN HOUSE, TOPSFIELD, MASS.

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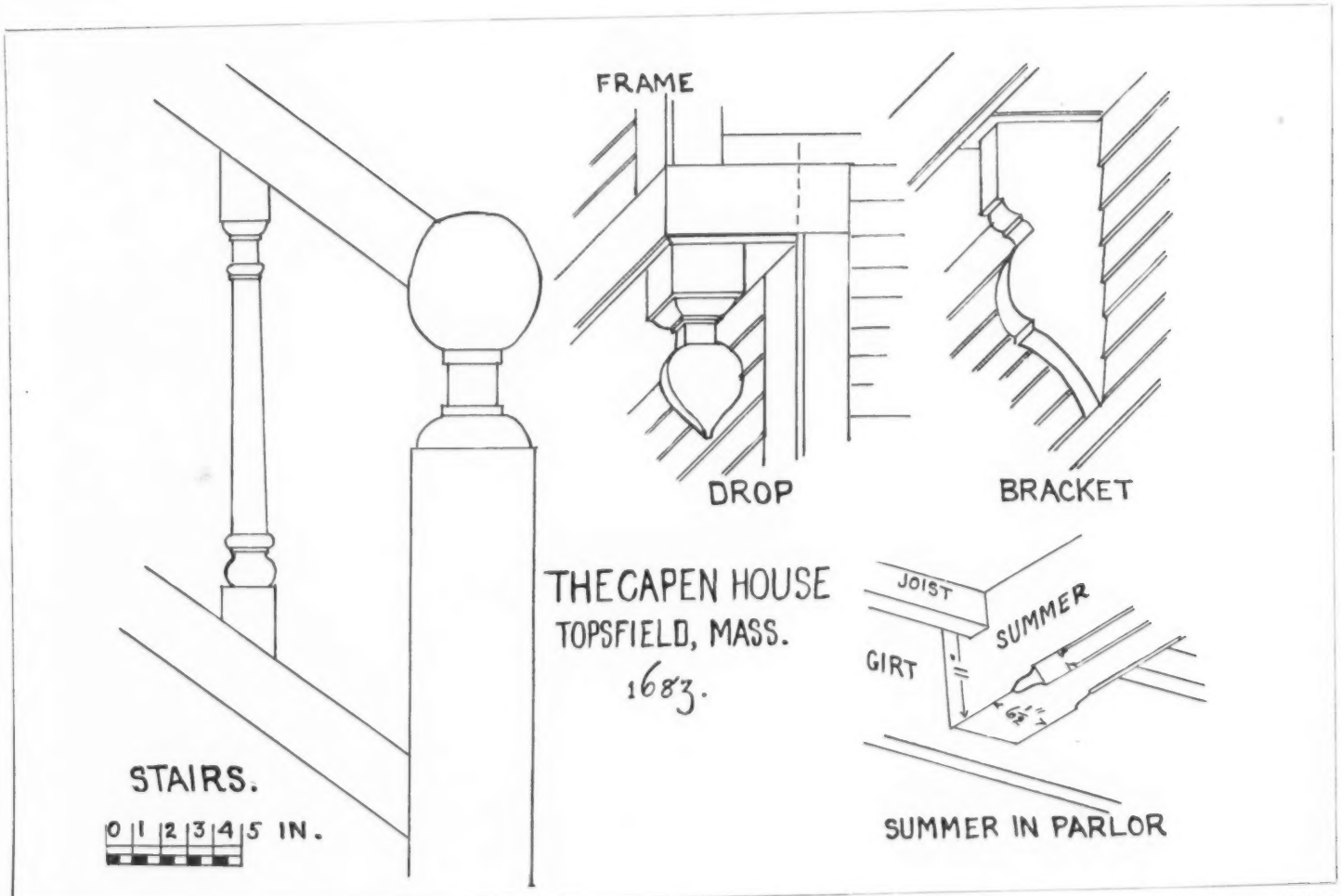

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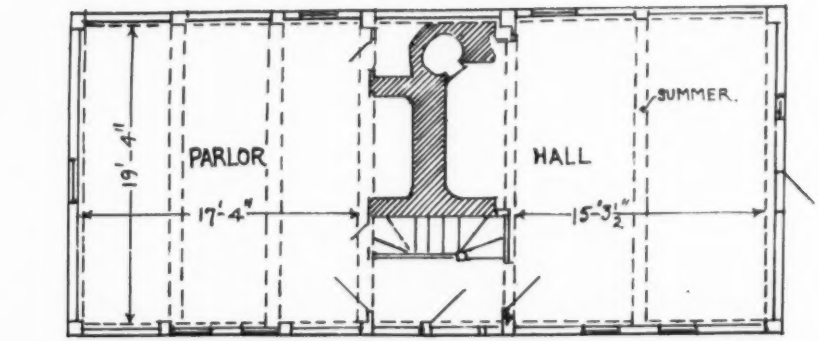
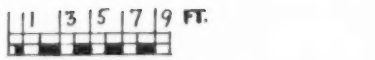
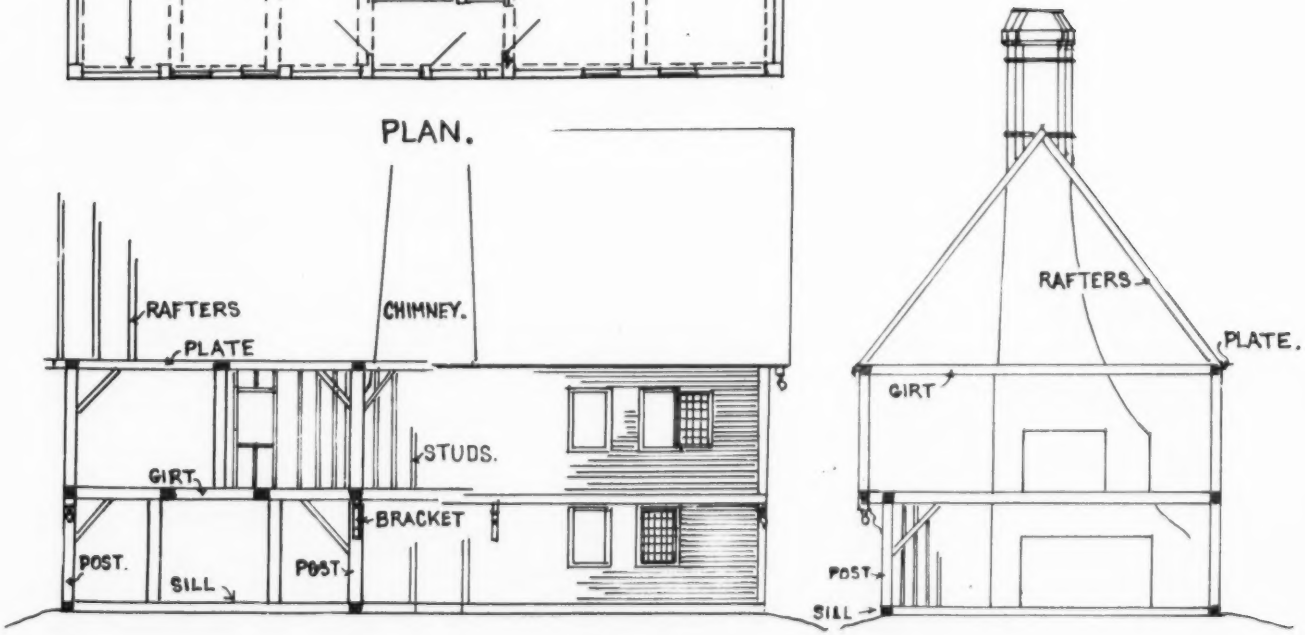


PLAN.





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THE ENTRY, WITH PARLOR BEYOND —CAPEN HOUSE, TOPSFIELD, MASS.

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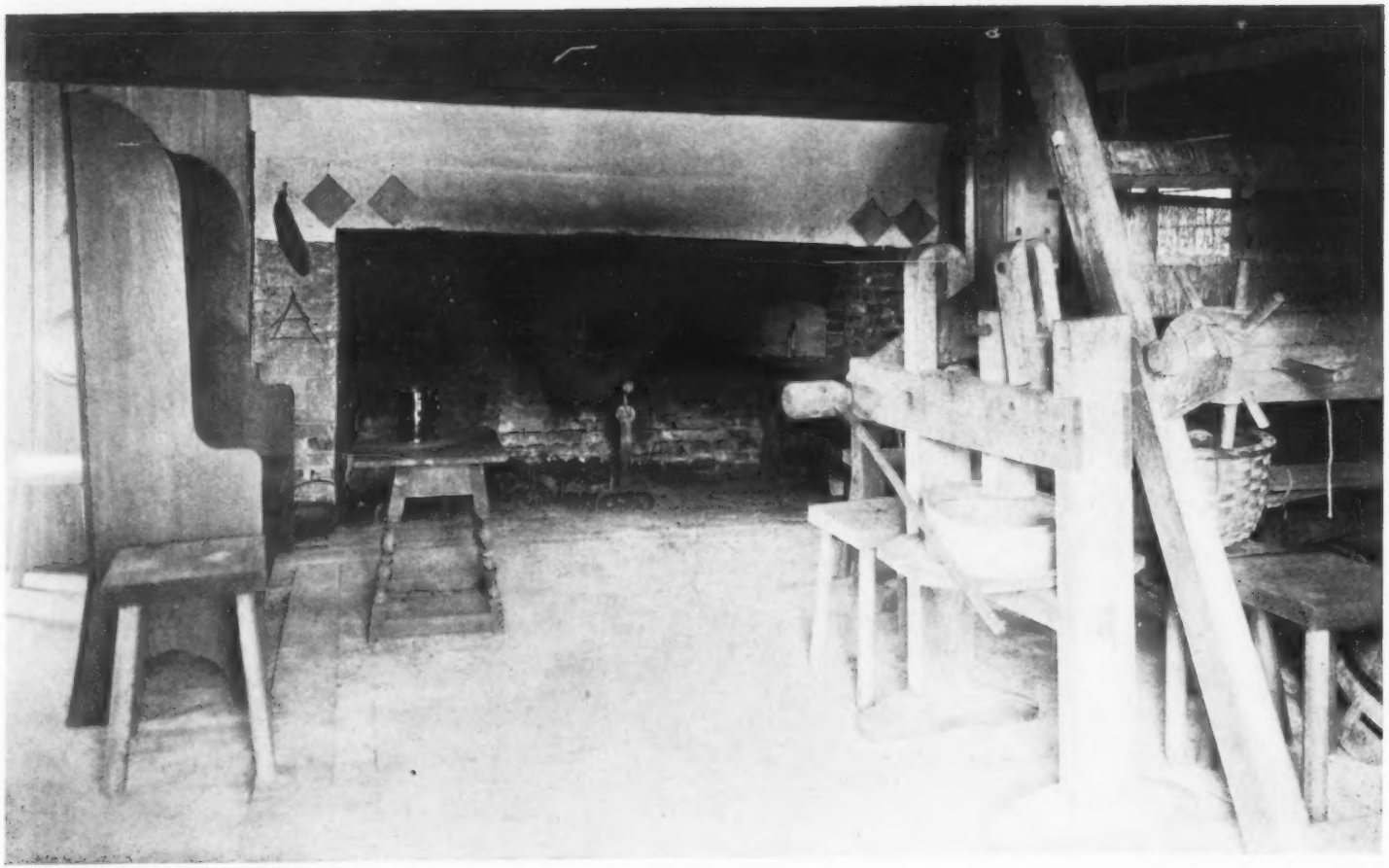
A CORNER IN THE HALL—CAPEN HOUSE, TOPSFIELD, MASS.



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HALL FIREPLACE—CAPEN HOUSE, TOPSFIELD, MASS.

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OLD LOOM AND UTENSILS IN CAPEN HOUSE, TOPSFIELD, MASS.

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THE PARLOR — CAPEN HOUSE, TOPSFIELD, MASS.

molded edges called "wainscot." Another illustration shows the old dresser with its store of pewter and an old "knife and spoon rack." Forks were practically unknown in New England before 1670 and were not in common use until the beginning of the eighteenth century.

In this connection it may be noted that it was the custom in early Colonial times in making inventories on the occasion of deaths, to specify in great detail the contents of each room, a mental picture thus being supplied of household furnishings and customs.

The timbers of the framing of course are old, but most of the interior woodwork, all of the shingles and clapboards (of red oak) are new. While so much restoration work gives a new appearance to the house, it serves to show how the houses of this period looked when fresh from the hands of their builders. The walls were left unpainted and in time, from age, smoke, and sunlight, the old wood acquired a soft brown tone and a satin-like texture that cannot be imitated. Another sign of age is to be found in the projection of the sills into the rooms. In later work they were concealed by the floor boards.

The parlor floor of this house has a lining of clay mixed with straw between the joists, which makes the floor warm, as there is a large cellar under each room. Old floors were sprinkled with sand or left bare. Between cooking, weaving, spinning, housecleaning, sewing and mending there were few idle moments in the life of a housekeeper in the olden time.

The purchase of this fine seventeenth century dwelling, built when Charles II. was king, together with over an acre of land, was made possible a few years ago by gifts to the Topsfield Historical Society. The situation is an ideal one—the house standing on a knoll shaded by several trees, and with plenty of open ground around. The fine oak frame; the original fireplaces, one four by six feet, and two and one-half feet deep, the other four by eight by three feet deep, with an oak lintel sixteen inches square; the overhanging second and third stories, together with the drops, brackets and verge boards—unusual architectural embellishments—the evidence of the original existence of which was found during the work of restoration, all contribute to make this house the finest seventeenth century dwelling now existing in New England.

At the completion of the restoration the Society entertained its guests at an old-fashioned "house-warming." The rooms were lighted with candles, and as the date was January 16, 1914, fires blazed in the great fireplaces, and a supper was served in the seventeenth century manner, consisting of baked beans, salted meat, brown and rye bread, Indian pudding, pan dowdy, and pumpkin and apple pies, served on wooden "trenchers" and eaten with broad-bladed steel knives and pewter spoons —no forks! The table linen was hand-woven, and the cider and milk were served in tall black-glaze mugs.

The house is open to visitors; a caretaker is in residence, and the rooms contain much that is of interest to the student of things colonial.

Glare in Museum Galleries

The Psychological Factor in the Lighting Problem

By Benjamin Ives Gilman

Part II — The Nave Plan versus The Court Plan

OF the two novelties of construction embodied by von Klenze in the Old Pinacothek in Munich in 1826, one —its top-lighting—the previous article has sought to prove a defect. The other —its corridor plan—the following pages will seek to prove a merit. As often happens, the defect was copied because it was easy to do so, and the merit dropped because it was difficult to do otherwise. In explaining his design, von Klenze stated his purpose to make it possible to reach the pictures of any school without passing through space devoted to those of any other. The unit of museum planning was not, according to this architect, an exhibition room, but an exhibition room with a passageway adjoining; the room in his plan being divided into two, one top-lighted as the chief gallery, and the other side-lighted for smaller pictures. This determination of the museum unit as a room plus a corridor recognized the basic nature of a structure devoted to permanent exhibition. A building through which people move to inspect any or all of certain classified contents demands freedom of direct communication between any two of its individual spaces.

The expansion of museums and of their office during the century since the planning of the Old Pinacothek has emphasized this demand for freedom of access in complicating it. The accumulations have emphasized it in leading to the frequent rearrangement of rooms. Their wider use has emphasized it in admitting the particular study of a single room by a class or audience under a leader or lecturer. Unless access to others can be had independently, the closing of a room for either purpose deprives visitors of the use of a whole suite. Again, their wider use has complicated the requirement of access in assuming both in theory and practice a tripartite form. This was signified in 1870 for art museums in the words "Art, Education, Industry" on the seal of the Museum of Fine Arts in Boston, and was first formally stated for all museums in Dr. Bather's Presidential Address in 1903 as inspiration of the public as a whole, instruction of the interested, and investigation by the specialist.[1] Corresponding to this triple division, the unit of museum planning has become an arrangement of three rooms with two intercommunicating corridors between.

There is one plan for a museum building which may be called the standard, in that no other one plan has been so often adopted; and by great good fortune its development in certain museums already expresses this triple unit. This plan provides exhibition space in two floors about two large areas open to the roof or the sky and separated by a structure used for entrance. In many museums the interior areas also are utilized for exhibition. In a number of museums, including one of the oldest buildings now used for museum purposes, the Naples Museum (1587), the external space consists of a double suite of rooms, inner and outer. Three museums lately built give the inner of the two secondary spaces the dimensions and use of a corridor, opening into the ground floor spaces on either side. These are the Art Institute in Chicago (1893), the Kelvingrove Museum in Glasgow (1901) and the Museum of Fine Arts in Boston (1909). This corridor variation of the standard plan, affording three

[1] F. A. Bather: "Address as President of the Museums Association," Museums Journal, London. September, 1903, pp. 71 ff.

kinds of space—the large interior areas and the upper and lower exterior rooms, with corridors between—offers a home for the modern triple unit. The corridors are intercommunicating and the rooms on either hand may be assigned to diverse purposes.

In the three museums mentioned the two large interior areas are top-lighted. Attic lighting, in its two forms—exterior, one-sided, or attic lighting proper, and interior, two-sided, or clerestory lighting—suggests a further development of this scheme which in preserving its solution of the problem of access, satisfies, together with the demand for avoidance of glare, a third demand now widely current among all interested in museums: the demand, namely, for some means of making collections of overwhelming size available to the public as a whole. For the court, open or top-lighted, may be substituted a nave, obtaining its light from clerestory windows above the outer rooms, and sharing it with the superposed corridors about it. This nave may be set apart for the public as a whole by devoting it to the exhibition of important objects and such as give a conspectus of the total contents of the museum. Being but a third of the total unit of the scheme, it may remain even in the largest museums no more extensive a space than can be visited on one occasion without confusion or fatigue. One of the floors of outer rooms may be given attic light and devoted to the exhibition of objects reserved for the study of interested persons; and the other given side-light and used for department offices and workrooms by the specialists engaged at the museum and their guests. Doors into the corridor system serving both nave and outer rooms may give independent access to every space which is used independently of others throughout the whole museum. Such a scheme would realize the essentials of an ideal stated by Mr. Brewer: "A natural history museum suggests itself where the public should be admitted to only a very small synoptic collection of group cases in specially built and lighted alcoves, and adjacent to these in each department, first the collections for those specially interested, beyond these again the reserve collections for the actual student."[2]

The scheme may be assumed a sound foundation for architectural development; since it follows the analogy of a cathedral, with its nave, aisles, chapels and triforium. Diagrams 20 to 25 represent in plan and sections a building embodying it. The professional reader will see, and the non-professional reader is asked to bear in mind, that these and following diagrams are not offered as designs, but as drawings showing one way in which certain requirements as to dimensions, arrangement, lighting and assignment of rooms might be observed in a museum design. No more than this could be asked of a museum official, and an architect has the right to demand no less of a professional client.

It may be noted that the modules of this building are taken exactly or nearly from the series of numbers expressing successive approximations to the proportion called by the Greek geometers the Golden Section; that is, the series 1, 2, 3, 5, 8, 13, 21, 34, 55, 89, 144, etc., each after the first two being the sum of the two preceding. In a line divided by the Golden Section the shorter segment is to the longer as the longer is to the whole line. There is no question as to the aesthetic value of the internal harmony of this proportion in certain cases, although the claims of an all-embracing application made for it a generation ago were doubtless excessive.

Diagrams 20 and 21 show that the scheme is based upon the top-lighted gallery already studied, namely, a room 34 feet each way with a window at 23 feet from the floor. The space occupied by twelve of these galleries is disposed about a corridor 8 feet wide completely enclosing a nave 55 feet wide, 142 feet long and 90 feet high to its flat ceiling. The corridor is purposely kept at the lowest limit of width that will insure the free passage of numbers of people, in order to make impossible its use for exhibition. Above the outer galleries a suite of side-lighted offices, 13

[2]Brewer, p. 389.

feet in height, occupies the same space and is served by a second corridor over the first. The lower corridor has the height of the cornice of the galleries, 21 feet, leaving a space between, 11 feet

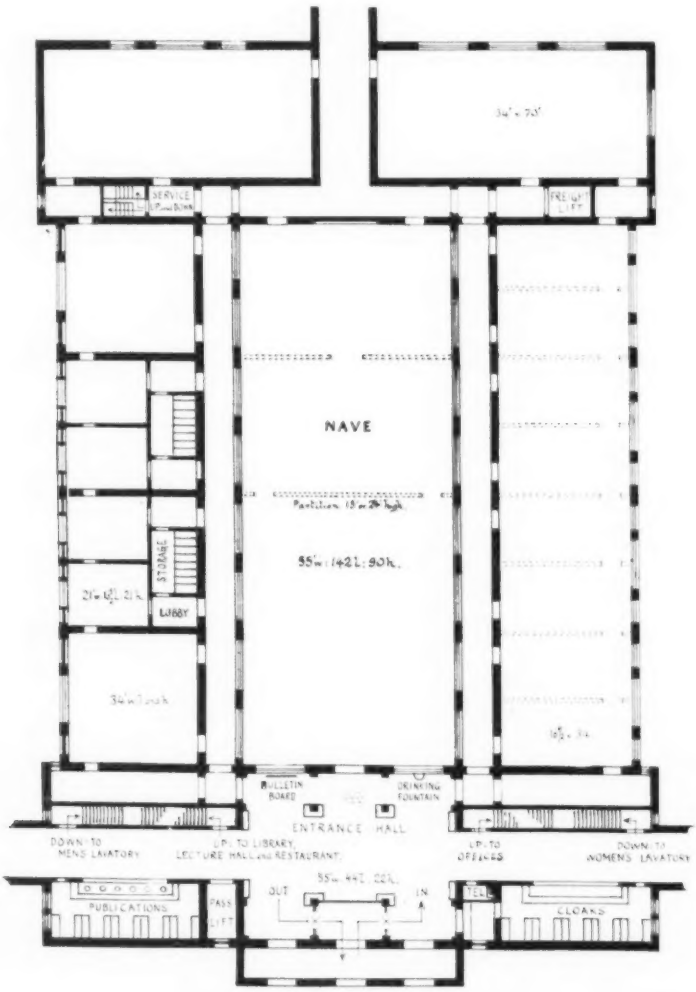


DIAGRAM 20.

high, accessible from the upper corridor and represented in the diagram as used as a vault for storage. All these corridor spaces borrow light from the nave, the lowest through openings at 13 feet in the screen separating it from the nave, the intermediate by lunettes crowning the screen, and the highest by a series of triforium windows. The position of the intermediate corridor on a level with the attic of the galleries suggests that it might on occasion become a light chamber instead of storage space, giving minor auxiliary illumination on the window wall of certain of the suite of galleries. The lighting in these galleries would be the unequally balanced high side-light preserving its unity which Mr. Wheelwright admits as an alternative; in a measure also fulfilling Mr. Brewer's ideal of the application of clerestory light to lower rooms.[3]

[3]Communications. III., pp. 106, 108.

The nave is lighted from windows along the side walls with sills at 67 feet from the floor. These windows would be out of the visitor's range of vision, except from the corner of the eye or much foreshortened, in all standpoints in the gallery. If clear glass were used, the light in the nave might be too intense for the best seeing. In any case curtains would be desirable to cut off direct sun. The screen with its cornice at 11 to 13 feet from the floor would give a background rising much above the customary 8 foot case for smaller objects, somewhat above most sculpture, and even above most, if not all, of the cases needed for larger natural history specimens.

Diagram 22 represents four bays of the nave with the screen in two of them carried to the level of the top of the upper cornice, 24 feet from the floor, in order to give a background for a very large canvas. The picture represented is one of the very largest, David's "Crowning of the Emperor Napoleon I." in the Louvre, 20 feet high by 30 wide.

The arrangement of the entrance to the nave shown in the plan is represented in Diagram 21, and the arrangement of the exit in Diagram 23. The picture chosen here is another of the very largest canvases, Titian's "Assumption of the Virgin," at Venice, 22 feet high by 12 wide. There would be no glare on either picture seen from any position which would bring it all within the range of normal seeing.

The nave is represented as partitioned into three sections, as if the largest were to be used for objects of science and the smaller two for works of art. The partitions are supposed to run either to the top of the screen, 13 feet, or to the top of the cornice above, 24 feet, according as lower or higher backgrounds or a more or less complete division is wished for. They might be made removable by keeping them on hand in sections, and using permanent sockets in the floor of the nave opposite the

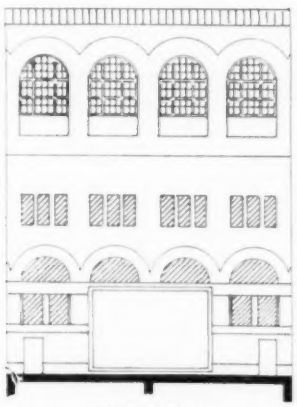


DIAGRAM 22.

piers. A notion of the probable effect of exhibitions in these divisions of the nave may be gained from the use of similar partitions 12 feet high in the top-lighted central hall of the new National Museum at Washington. Mr. Brewer writes that the galleries thus formed "afford excellent exhibition

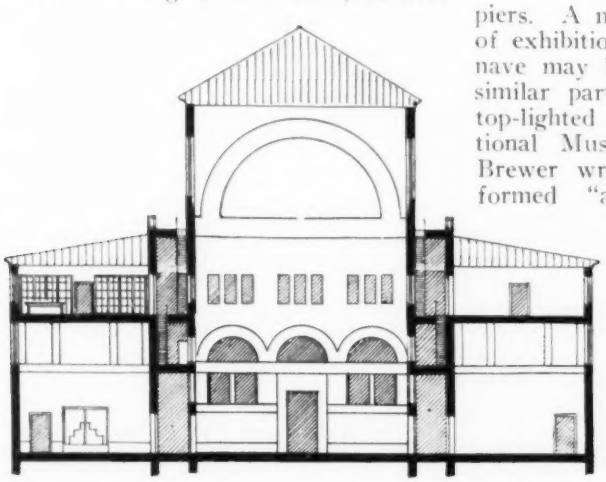


DIAGRAM 21.

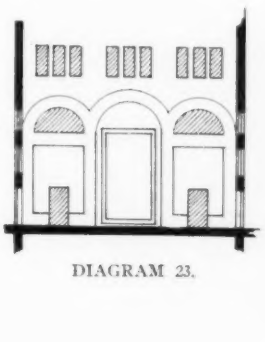


DIAGRAM 23.

space for pictures, and the light from the high laylight (55 feet from the floor) reflected and diffused by the white wall above is excellent."[4] Further, such

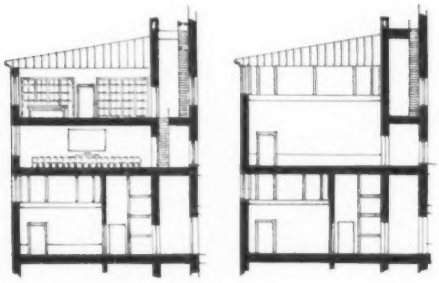


DIAGRAM 24.

screens tend to detach the mind of the spectator from the great space overhead; and upon the background they offer, the smallest objects—a collection of insects, of coins, of prints, of busts—would be at home in the largest naves. The largest division would suitably contain any objects but the largest. For the exhibition of the skeleton of a whale or other gigantic animal, or for a large architectural cast, the whole nave would be none too large. Doors are supposed provided from the corridors to all divisions of the nave, as well as to all the parts into which the gallery space could conveniently be divided. These doors would permit cutting off direct access from one divison of the nave to another, passage being around through the corridor; or connecting the exhibits in any division with galleries devoted to corresponding objects.

In Diagram 20 the gallery space about the nave is shown with various divisions, as if to accommodate a miscellaneous collection. There are two large rooms, 34 by 70, one lighted from the long side only, as if for pictures, the other from both the side and one end, as if for case objects. All of the right hand gallery space is in one large apartment 142 feet long, divided into 17-foot bays by partitions reaching only to the cornice. The left hand space contains two standard galleries 34 feet square, separated by four cabinets, 16½ by 21. In these the ceiling is supposed brought down to the level of the cornice at 21 feet, and the window set at 14 feet. The space behind marked "Storage" in the plan is represented fitted with racks for the accommodation of pictures or other objects in reserve. Comparing these cabinets with the two 34-foot square galleries they replace, the wall-space shows a loss of about 10 per cent., while about 15 per cent. of the area of the rooms is secured for storage.

It would appear entirely practicable, instead of blocking up the 6½-foot openings on either side of the central window as shown in the left hand suite, to allow them to remain open, as shown in the right hand suite. If opaque curtains were then provided for the side-openings they could be kept drawn in ordinary weather, to be withdrawn in case of waning light or dark days, or removed in case of a use of the gallery demanding unusual illumination.

Alternative divisions of the space above the cabinets, made possible by the use of the intermediate corridor for access, are shown in Diagram 24. Of these, one represents the use of the attic space, 11 feet high, for additional studies or classrooms, the other to permit of additional galleries 26 feet high. It may be claimed as a merit of the present general scheme that its corridor system permits this elasticity in the choice of floor levels in the whole structure about the nave.

A fourth possible division and use of space in elevation and plan in this structure is shown in Diagram 25. The end in view is the reservation of light for exhibits, whose success in many instances has already ensured it a permanent place among museum methods. The gallery of the upper tier, which is shown as an alternative in Diagram 24 and is reached by the intermediate corridor, is here reduced to the width of that on the ground floor, 21 feet, and is represented as used either for cases or for exhibits occupying a space of about 14 by 16 feet and seen from behind a glass partition dividing off a passage way from door to door. The arrange-

[4] Brewer, p. 392.

ment nearly reproduces the plan of an outside corridor used for the Zoological Collection of the Darmstadt Museum and shown in Diagram 19. The adjoining space is divided horizontally into two suites of smaller spaces for exhibits to be looked at from the corridor through a partition. Their size, 12 by 16 feet in the intermediate corridor, and 10 by 12 feet in the upper, is somewhat greater than that of the Bird Habitat groups in the American Museum of Natural History in New York, whose installation as reported by Mr. Brewer is given in Diagram 19 as an arrangement for a low window; and their method of lighting is like that of the Aquarium at Detroit, Michigan, mentioned with special approval by this critic. Mr. Brewer notes (page 396) that the Aquarium at Detroit, a city of half a million inhabitants, has a million visitors a year, although three miles from the city proper. "These figures should give museum directors seriously to think; and they should ask themselves, especially those in charge of natural history collections, whether methods of display and lighting more akin to those employed in aquaria —for instance the alcove group system with overhead lighting—might not add enormously to the popularity of their collections." It would appear that such series of room-exhibits might include many other kinds of objects than those of natural history: historical remains, fragments of interiors, or ethnological specimens. According to the present scheme these two corridor suites would be lighted from a continuous skylight just outside the parapet of the ambulatory on the roof, through two series of wells. The wells lighting the upper suite are about 8 by 10 feet and 6 feet deep; those lighting the lower suite about 6 by 10 feet and 20 feet deep. Each of these latter passes between two of the upper suite of cabinets and lights two of the lower and larger.

As the attic lighting of the chief galleries in the present scheme practically reproduces the lighting of the alcoves in the central corridor form of the reservation of light—shown in Diagram 19 and lately advocated as "top-side" light by Mr. Seager—and as the device of the solid velum used in the Rottmann Gallery has not since found approval or

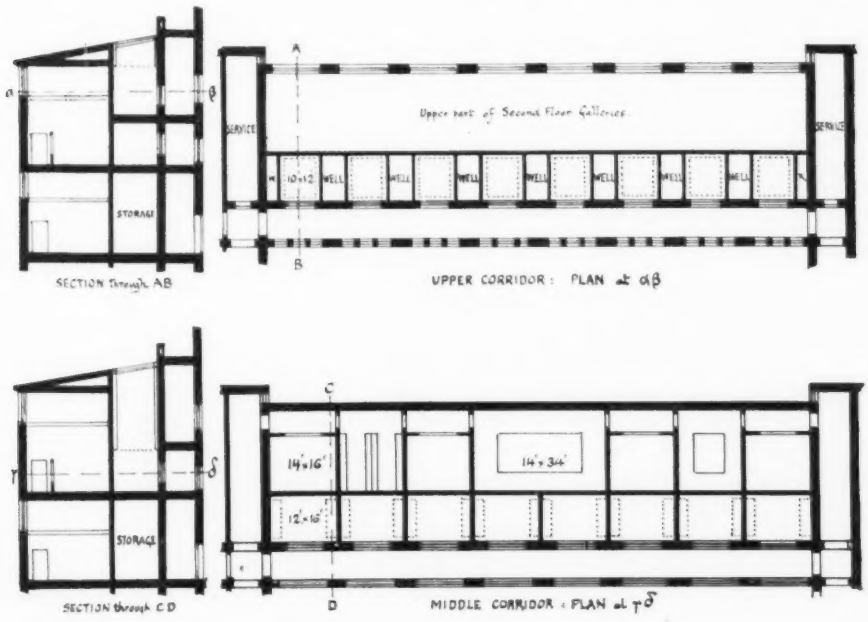


DIAGRAM 25.

imitation, there remains but one desirable form of the six shown in the diagram

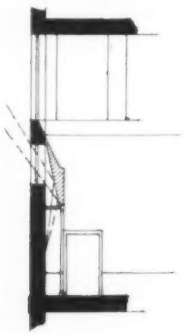


DIAGRAM 26.

which has not yet been taken advantage of here. This is the method of reserving light for exhibits under a high window employed in the Stockholm Museum, and described by Dr. Bather.[5] Diagram 26 shows an application which might be made of this method in the chief galleries of the present scheme. The window wall of the gallery below the cornice is occupied by a construction like a high case—or, if open, a niche. The inclined back of the upper framework serves as a reflecting surface to shield the visitor from light coming from an opening below the cornice, and direct it through a diffusing medium upon the exhibits hung or set below. The window wall up to 11 feet or above could in this way be specially lighted without any direct glare reaching the visitor's eyes. It must be admitted that illumination from an unseen source directly above the object inspected is top-light in a pronounced form. While in special instances it might be justified, a certain unearthliness of aspect would appear inseparable from it, and its availability for museum objects in general may be doubted. In the attic-lighted galleries of the present scheme the need of such a device might never be felt. The large and bright reflecting surface above the opposite cornice would ensure a considerable illumination on the window wall, and the eyes of the visitor would retain a degree of sensibility at present unknown in museums.

The entrance section of the building shown in Diagram 20 is conceived as a large mass fronting the rest of the structure after the manner of the towers and their connection in a cathedral. It is supposed constructed in four floors, from 22 feet downward in height, to contain all the various minor facilities now offered by large museums. The entrance hall is flanked by a cloak room and an office for the sale of catalogues and photographs, and gives access by stairways downward to the public lavatories, and upward by stairways and an elevator to the offices and library immediately above, the lecture hall above this, and the restaurant and kitchen on the top floor. The indicated size of these main rooms, 44 by 55 feet, gives an ample reading room and restaurant, and a lecture hall seating perhaps 300 people, and capable of extension. All the upper rooms being central in the front of the building may be given unobstructed light from along one side. The service stairway and the freight elevator provided for attendants and supplies in the transverse corridor at the rear of the building would be accessible from these rooms through the upper corridors on either side of the nave.

The entrance hall would be lighted both from the nave over the screen and from or over the vestibule in front. It is large enough to be the general meeting place of visitors, and for that purpose its central section is provided with seats about the columns and against the adjacent walls. The cloak room has a window directly opposite the entrance turnstile, and a long counter opening on the transverse passage, where, on crowded occasions, a number of persons could stand out of the way of passers and get their wraps from several attendants. A telephone booth adjoins. The publication office is in the corresponding position, where intending purchasers could inspect photographs undisturbed and under ample light from a high side window. As all of these utilities, including the elevator, are placed in the transverse passages, the entrance hall itself could be

[5] F. A. Bather. Museumskunde, Vol. IV., 1908, pp. 66 f.

designed and used as a dignified hall of reception, containing nothing to distract the visitor from the essential purpose of his visit.

An excess provision is made in this entrance section for the various subsidiary needs of a museum, in anticipation of the inevitable expansion toward which every museum must look. A museum by its nature as an accumulation of objects worth keeping in sight is liable to grow as other buildings are not, and in its design should be accommodated to this fact. A theatre has a limit of size, even a railway station may be adjusted to all reasonable expectation of traffic, but there is no limit to the desire of a community to possess in its museum an epitome of the surrounding world of nature and man. In strictness, no plan for a museum building which contemplates its eventual completion is an adequate plan. The design must always be such as will not be marred by additions. Two alternatives are possible.

The choice of a plan for a building to be indefinitely extended lies between a single conglomerate structure and a number of buildings connected by corridors —a pile or a group; and two considerations in the present case point to the choice of a group.

If growth were to take the form of an extension of the building shown in Diagram 20, its nave must either be prolonged, or extended by transepts or wings. Prolongation could not be indefinitely continued both for artistic and practical reasons. The Museum of Natural History in Paris is probably alone among museums in the great length—1,725 feet—anticipated for its series of narrow halls on the Rue Buffon. Even the long wing of the Louvre is already voted a weariness to the traveler. Transepts or wings would violate the fundamental external requirement of good museum lighting, that there should be no rooms lighted by windows at internal angles between high walls. It may be stated as a canon of the external conditions of light for a museum that only a minimum of light in the exhibition rooms may be permitted to come by reflection from façades and roofs as a half of it does in an internal angle. The ideal is that it should be impossible from any space devoted to exhibition to see through the light opening anything but the sky. As museums are now constructed, even top-light has not the advantage in this respect that might be anticipated, towers and higher rising walls often cutting off large sections of the sky from the gallery below; while side-lighted rooms are placed without hesitation in the angles of wings, behind pillars, or on courts whose opposite walls may block off the sky almost completely. Yet the light reflected from façades and from roofs is deficient for museum purposes both in quantity and quality. These surfaces reflect but a fraction of the light coming from the sky, they are generally colored and their weathering is never within control.

DIAGRAM 27.

There remains the alternative of a group. The museum accommodations shown in Diagram 20 may be indefinitely expanded by adding other buildings at a distance to be determined by the canon of good external lighting, and connecting them with each other by low corridors. Such a group is the inevitable outcome if a museum is to be planned for indefinite expansion according to its essential need of white light.

The possible connection of other buildings with that shown in Diagram 20 is suggested by the open ends of the transverse passage through the entrance hall and that leading out from the nave. The structure, in itself of very modest dimensions as museums go, may become the parent building of a museum group of any size. In the outline plan of Diagram 27 it is represented as Stage I of such a development. Diagram 28 shows an immediate descendant, here supposed connected with its progenitor by a prolongation of the transverse passage as an

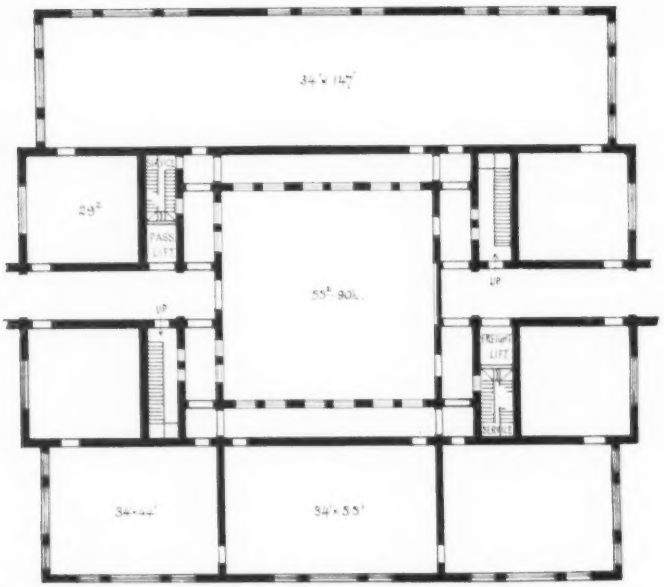


DIAGRAM 28.

outside corridor 150 feet long.[6] This connecting corridor, being designed for daily public use and not as an auxiliary passage for exceptional occasions and special classes of persons, is planned 13

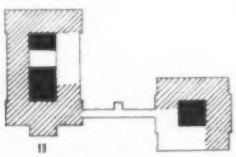


DIAGRAM 29.

feet wide. In the Museum of Natural History at Paris, structures on either side the main building are connected with it by corridors 50 feet long and 10 feet wide. The present corridor is conceived as a low cloister about 13 feet high with a still lower service passage over it connected with the upper system of the parent building.

Except for the entrance section, the pavilion reproduces in little all the features of the parent building. It has its central public space, like the crossing and lantern of a cathedral, its suite of environing galleries, its public and service stairways, its department rooms or galleries above, its passenger and freight lifts, and its corridor system. The result of its erection would be the group of buildings shown in the outline plan of Diagram 29 as Stage II. of a progressive development from the inconspicuous beginning shown in Diagram 20. A sound architectural result might be expected, since the two components of the group would illustrate the same general type of design on the same modules, and yet with sufficient variety of application to escape monotony.

On account of this general similarity —only the galleries on either side the entrance corridor and those opposite contributing a new unit of size—the pavilion may grow by expansion toward and beyond the likeness of the parent building. Its lantern may add to itself two transverse naves in opposite directions, about which the corridors and galleries may likewise grow. It is to be assumed that appropriate provision in the foundation and walls involved would make such extension an easy matter, and something

[6] To guard against risk from fire, Mr. Weissman thinks that a space of 140 feet should separate a museum on all sides from neighboring houses. "Gallery Building." A. W. Weissman, Journal of the Royal Institute of British Architects, Vol. XIV., 1907, p. 417.

to be undertaken little by little, as the needs of the collections demanded.

In further stages of growth, other pavilions, reached by the other two corridors left open in Diagram 20, might be added, and expanded in their turn. In Diagram 30 the scheme is represented at a point when its size would approach that of the largest museums of any kind either existing or planned—the *megalomuseum* as now built or dreamed.

The space occupied by the buildings and grounds shown in Diagram 30 within the corners indicated is a square of 800 feet, or 16 acres, of which about 7½ acres is covered by construction. In this proportion the scheme differs greatly from the largest modern museums. In all cases these cover more and sometimes all of the ground area they occupy. In the area of the buildings the scheme is still below the largest; but its indefinite extension on the same plan is possible, and as the diagram shows, in five ways. The completed plan of the Metropolitan Museum of Art in New York calls for a building 950 by 550 feet, covering 13 acres with a comparatively small deduction for courts, already in part covered by construction. The British Museum as built and the American Museum of Natural History in New York as planned, each cover 8 acres with their buildings, the courts of the American Museum adding 4½ acres to its proposed total extent. The new Field Mu-

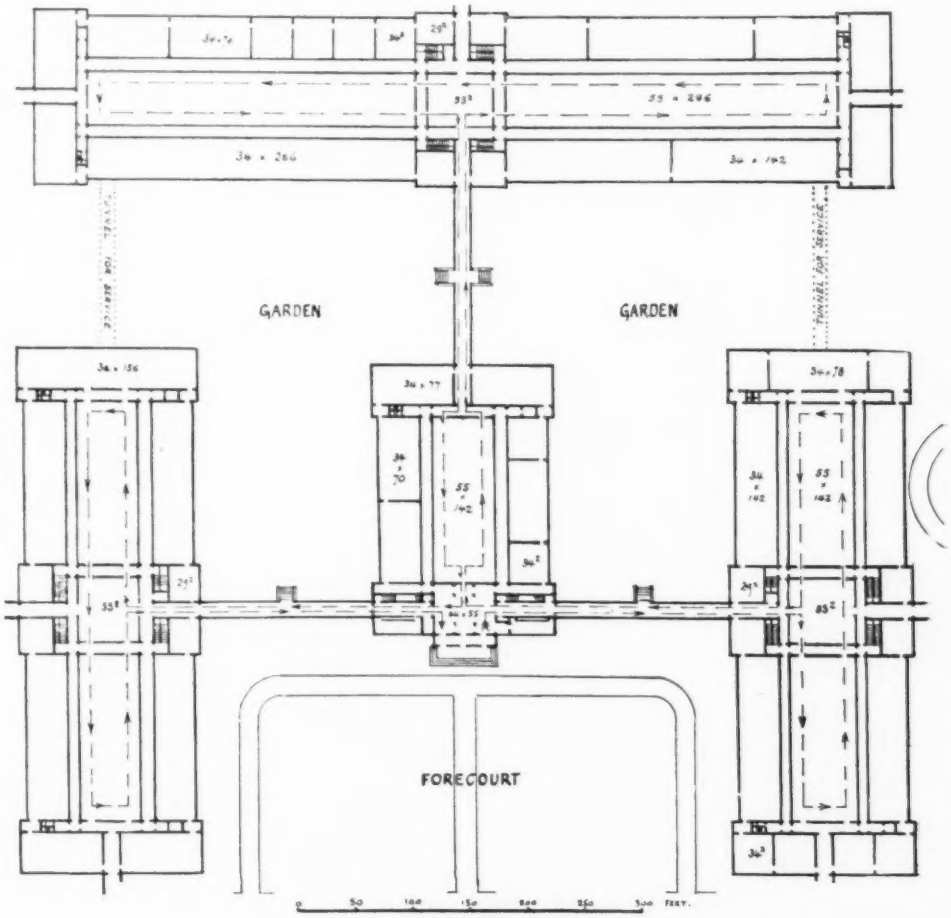


DIAGRAM 30.

seum of Natural History in Chicago covers 6 acres, and the Museum of Natural History in London 4½ acres, the buildings in each case extending over the entire area occupied. The building of the Brooklyn Institute of Arts and Sciences will occupy with its courts as planned an area of 8 acres and cover 5½ acres with construction. The National Museum at Washington covers 4 acres, or with its courts, 5.

A comparison of floor space yields other results on account of the different number of floors in the building. In the National Museum at Washington the floor space devoted to exhibition is about 220,000 square feet, or 5½ acres, and that devoted to department offices and storage about 4 acres, the total floor space in four floors being nearly 12 acres. The administration of the museum is reported by Mr. Brewer as thinking the exhibition space large enough for any museum, but the department space too small for their purposes. According to this judgment a megalo-museum of the present should not devote more than about 5 acres to exhibition space, but might to advantage assign at least an equal area to department purposes. The museum of Diagram 30 meets both requirements; but by reserving the first floor galleries for those who especially wish to enter, gives but two of its five acres of exhibition space to the public as a whole.[7] The reduction may be regarded as a wholesome readaptation of the amount of things shown to the powers of those who are to see them. A walk through five acres of floor space passing within 15 feet of all the exhibits might be expected to extend to about three miles. Through the naves and cloisters of the present scheme it would reduce to about one mile. A pressing need of a better adjustment of means to ends in the matter of public exhibition would be met by such a limitation of primary exhibition space.

Conceived as a group in elevation, the scheme would offer opportunities for three lantern towers disposed symmetrically about the parent building, whose cathedral front would distinguish it in appearance from the rest. The high naves would announce the paramount interest of the museum in the community generally. The use of high naves meets the architectural objection Mr. Weissman expresses to top-lighted museums. "Buildings like these being rather low, the exterior is not very satisfactory."[8] The three connecting cloisters are each given openings at the centre into two extensive gardens among the wings. The main entrance would be approached through a wide forecourt, and a business entrance would have a driveway of its own at the side.

A park is the natural setting for a large museum, since a park is the pleasure ground of a city and every large museum is principally a holiday house, having no claim on the people generally except in their hours of leisure. A park, too, best offers the quiet and exemption from dust and risk of fire which every museum needs; and a park alone gives it freedom to expand into a group of structures sufficiently open to ensure the predominance of light from the sky in the galleries.

In the naves of the present scheme with its liberal gardens and forecourt, the ideal of pure skylight would be everywhere fulfilled except in a few windows of the parent building, through which it would be possible to see from the floor a part of the rear wall of the entrance structure.

In the galleries fronting outward there would be no obstruction from other buildings of the group. The conditions in the inward-fronting galleries are represented in Diagrams 31 and 32. The narrow cross-hatching indicates the area in which all the light received in a plane perpendicular to the wall of the room is reflected from the walls and roof of the opposite wing; the space left blank indicates the area receiving light from the sky only; and the wider cross-hatching indicates the area receiving part of its light from the sky and part by reflection.

[7]The total floor area of the buildings represented in Diagram 30 is about 600,000 feet, or 15 acres. The basement would cover 215,000 feet, the entrance block in its four floors 30,000, the naves 80,000, the first floor galleries 135,000, and the second floor also 135,000. The department space partly in the basement and partly on the second floor would easily reach and pass the limit of five acres.

[8]Weissman, p. 417.

the proportion of skylight increasing as the blank space is approached. The sections are drawn through the tunnel for service connecting the ends of the largest wing with the two next in size, because at this point the buildings are nearest together and the conditions are most unfavorable. They put the matter unfavorably, also, in that the amount of obstruction represented obtains through only a part of the horizontal angle over which light enters the gallery windows. But even the obstruction as shown is negligible. The diagrams indicate that all parts of both opposite and transverse walls receive light only from the sky up to 10 feet in the 34-foot galleries, to 8 feet in the 26-foot second floor galleries, and up to 5 feet in the 21-foot first floor galleries; and that all other parts of the exhibition zone get some skylight and most parts a preponderance. There would also be some slight interference with light from the sky, due to the connecting cloisters, on one of the walls of the adjacent 29-foot square galleries in each wing.

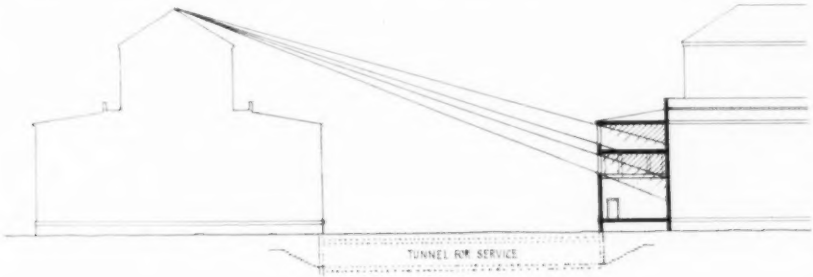


DIAGRAM 31.

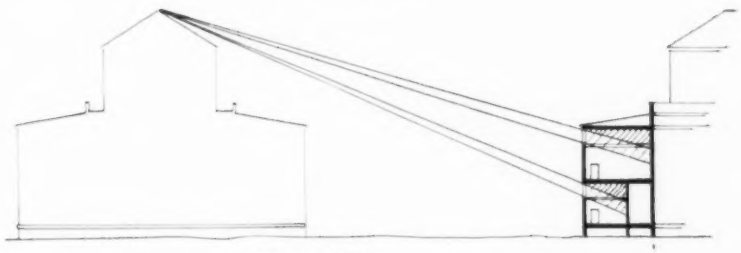


DIAGRAM 32.

It is hardly too much to claim that in a building such as this, while the light would be ample in quantity and practically ideal in quality, the problem of glare would be completely solved. From the time the visitor enters the museum until he leaves it, he is never brought face to face with any source of light. If he keeps to the public space he will never see one in a way to notice it; and while, in the galleries, at one doorway at each corner of each wing he sees a window at an angle before him, it would be almost wholly above the range of his normal vision. It is to be particularly remarked that he enters the galleries through a corridor but dimly lighted by a window he cannot see. In the City Museum of Amsterdam, where the stairway is lighted from above through yellowish glass, the architect thought a similar provision necessary. Mr. Weissman writes: "As it would not be well to enter the gallery rooms at once from this warm light, comparatively dark rooms were arranged through which the visitors have to pass before entering."[9]

In the museum of Diagram 30 a degree of visual sensibility might be confidently awaited that would render its main lighting problem one of exclusion and not of admission, and which would notably lessen the fatigue of a visit.

The question of artificial lighting has

[9]Weissman, p. 443.

not been touched upon for two reasons. First, a museum is a daylight institution. Any works of fine art it may contain were made in daylight and meant to be looked at in daylight; and none of its contents have an appeal that can compete with the more restful or more stirring enjoyments or means of improvement to which our evenings are given. Museum objects demand to be seen in hours of complete relaxation, and not in hours needed for recovery from the cares and excitements of full days. At present Saturday afternoons and Sundays are the only times during which people in general can be expected to visit museums, and only if further reductions are made in hours of work can they be led to spend more of their time there to good purpose. Again, a striking fact has been established by Professor Ferree's recent inquiries. Artificial lighting proves a source of eye-strain hitherto unsuspected. His experiments show that while after several hours of work under daylight the capacity of the eye remains practically what it was at first, the same period of work under artificial light is marked by a steady and rapid decline in visual powers.[10] Artificial illumination of museum exhibits adds a new and all-important kind of weariness to what is already one of the most exhausting of occupations.

The search for the best internal conditions of light in museums led to the substitution of naves for courts in the buildings of which the scheme of Diagram 30 is composed; and the search for the best external conditions determined it as a group instead of a conglomerate. There is another consideration of great importance which would of itself suffice to incline the choice toward the radial plan of buildings with cloister connections instead of the cellular plan of a building with interior courts. A museum building needs to be comprehensible as a whole to its visitors. They must know where they are at any time, what remains before them and whither to turn to reach it. The need is felt by every one in a museum with which he is not familiar. It is felt by the majority of people in the museum of their own town, and by all without exception in the museums of other places. Every one in most museums and most people in every museum want to be able to see all its departments and all its chief treasures in one visit of an hour or a few hours. In order that they should be able to do this without bewilderment, difficulty and waste of time, there should be an easily comprehensible circuit through the whole space devoted to the public. Such a circuit is possible and easy in a museum on the radial plan here adopted, and difficult or impossible in a museum on the usual cellular plan. One simple rule without any map or plan would guide the visitor through the whole public space of the scheme of Diagram 30 or its further developments, and carry him back to his starting point without bringing him twice before the same exhibits—"*Keep to the right when you can.*" The broken line shows whither this rule would lead him on starting from the entrance. Keeping it in mind, there is no alternative presented at any point; no opportunity to say, "Have we seen this before?" or "Which shall we take first?" If there is any turn to the right before him he has not seen the collection to which it leads, and there is no need of deciding what to see, for all will be seen in course by following the rule. With a cellular plan, it may be impossible to see all the galleries without seeing some twice; and when possible, none but a complicated set of directions will enable the visitor to do it.

This appears from the consideration that from any junction of three wings at right angles, of which there are two on opposite sides of the building in a museum about two courts, four in a museum about four, and so on for more complex schemes, there are three paths which sooner or later must be traversed if all the exhibits are to be inspected. A single line representing the visitor's path has but two ends; and one of these ends must lie at each of the triple points, the line being continuous at that point in the other two possible directions.

[10] C. E. Ferree: "Tests for the Efficiency of the Eye." Transactions of the Illuminating Engineering Society. Vol. VIII., No. 1, January, 1913, pp. 51 and 52.

Hence, starting at the entrance as one triple point, a single journey through the building will end at the opposite triple point, and to reach the entrance he must traverse the central wing again. It is true that he might then ascend the stairs and visit the next floor in the contrary sense; so that if the exhibition space consisted of an even number of floors the visitor might return finally to the entrance by the elevator or stairway without seeing the same exhibits twice. It is also true that a double journey up one side and down the other in each wing is possible without passing the same side twice, but the process proves complicated. The visitor may, for example in a building with four courts, make twice the circuit of the outer wings of the building as shown in Diagram 33, and then, proceeding up the central wing to its crossing with others, from this point out go up and back through each of these, taking his way back to the entrance as his second trip through the central wing. But beside exalting the purpose to get through the museum over the purpose to see its contents as far as may be in connected fashion, this rule presupposes a capacity of orientation and a memory for locality which would be sorely tested at each of the four points where alternative ways opened, and of which the public in general is far from capable. As a popular circuit, the journey would probably be prolific of repeated visits to the same exhibits and the missing of many; while the rule given for the museum of Diagram 30 would lead to no such annoyance because of its simple content and orderly result. At the entrance there would be the choice which of the three ways open to follow first. Diagram 30 supposes the right hand wing chosen, but the choice of the parent building would give the same result. The visitor would enter the nave, since the right hand passage, leading to the galleries, would not be open. Passing through the nave and into the corridor beyond, he must turn to the left because the right hand door to the corridor is also closed; and taking the first turn to the right, would find himself in the cloister leading to the long wing. Traversing this wing, first on one side and then the other, by the same rule, he would eventually find himself again in the cloister, and after making a short necessary turn to the left, again in the nave of the parent building and back at the entrance. Here a way to the right again opens, leading to one of the smaller wings through both of which the same rule would lead him eventually again to the entrance, having exhausted his three choices. Meanwhile, at any point the specially interested visitor could, by asking an attendant, learn the way to such of the related galleries as he might wish to see; and could inspect their contents undisturbed by the

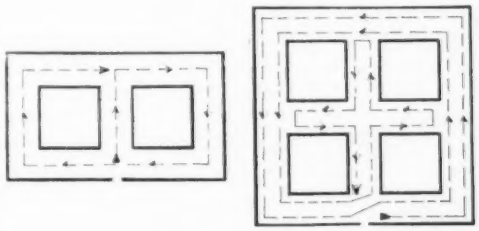


DIAGRAM 33.

main throng of visitors. This exemption would be especially welcome in museums of art. Professor Paul Clemen writes: "Our modern exhibition buildings have shown that the rooms which do not lie directly in the way of the throng have the happiest and most intimate effect and are best adapted for the quiet and contemplative enjoyment of art."[11] In the present circuit one only of the naves, that of the parent building, would have been seen in two visits separated by an interval. In default of special measures to the contrary, the collections shown here would doubtless always retain something of their original miscellaneous character as the nucleus of all the collections. The others, each supposedly devoted to one main department of the museum, would have been seen continuously. These continuous visits would be spaced each from the other by promenades through the cloisters. The public circuit of the museum of Diagram 30, short as it is, would not consist of an unbroken round of inspection of fresh objects, as in almost all existing mu-

[11]Paul Clemen. Zeitschrift fur Bildende Kunst 1905, p. 40.

seums, but of a series of separate visits to more or less related objects with short walks between. While the contents of the museum would everywhere be presented to the visitor in rooms giving no view of anything else, there would be recurrent opportunities and time for a return to the outside world, and in fine weather for a descent into the gardens. These cloister promenades would at once rest his eyes, vary the call on his muscles, and give him opportunity to turn his mind away from what had gone toward what was coming.

In another way the fatigue of a visit to the museum of Diagram 30 would be less than in most other museums. The whole public space and most, if not all, of the reserved exhibits could be seen without climbing any stairs.[12] A staircase in a museum confronts the visitor with a physical task of a kind he may wish to avoid and which in consideration of the mental tasks before him, he may well be spared if it can so be arranged.

The structure of the scheme lends itself to the division of the collections into seven departments under three heads. It is tempting to fill out such a division in accordance with the possibilities of gathering tangible objects worth keeping. In a general museum the three wings may represent man, other forms of life and the planet we inhabit; or Anthropology, Biology, and Geology, as they do in the National Museum at Washington. In an art museum, they may represent the graphic arts, the ancient art of the Mediterranean, and modern art of East and West, as they do at the Museum of Fine Arts in Boston. But a museum is born, not made; its collections mainly grow, not by taking thought, but by the grace of Heaven; and any large plan for its development is foredoomed to disappointment.

At first, it may be assumed, any collections the parent building was erected to contain would be insufficient to fill it, and some of the space could, pending their growth, be lent to other enterprises, classes, clubs, or other organizations for public welfare. This is the situation represented by the blank spaces in outline plan I. of Diagram 27, where the public, and most of the gallery space, is indicated as filled. Outline plan II., of Diagram 29, represents the addition of a pavilion to accommodate one of the departments grown beyond the available space in the parent building. Its transfer vacates space in both the nave and the galleries of the parent building, and in the pavilion there is space which it must grow to fill. Outline plan III. of Diagram 34 represents the transplanting of another department into a second pavilion, and the enlargement of the first to accommodate the rapid growth of the

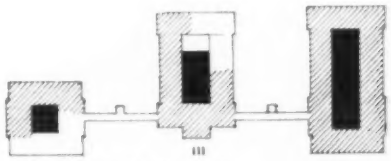


DIAGRAM 34.

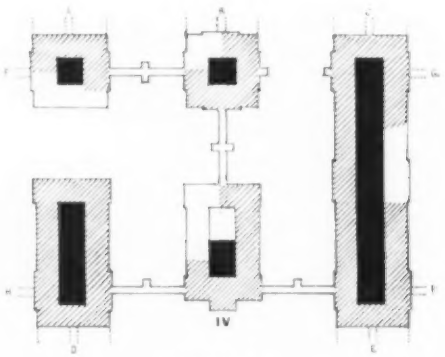


DIAGRAM 35.

department first moved. At this point in the supposed growth of the museum, a large endowment, a government grant, extraordinary success in some expedition, or other unforeseeable event, suddenly reduces the symmetric plan of Diagram 30 to an impossibility. The department first moved now turns out to be the main museum. Long discussions ensue, and the architects are called upon to devise a substitute. Nevertheless, the

[12] ". . . everyone I believe greeted with joy the idea of a museum where weary mounting of stairs was to be wholly, or to a large extent, eliminated." R. Clipston Sturgis. Report on Plans Presented to the Building Committee of the Museum of Fine Arts, Boston, 1905, p. 11.

principle adopted proves equal to the emergency, as appears in outline plan IV. of Diagram 55. The first pavilion expands into a great double wing, like that planned to be entered from the end of the parent building. Other pavilions follow in due course, leaving the group still a harmonious architectural mass, if an unsymmetrical one, with further unlimited possibilities of extension. Such a combination of naves, corridors, and galleries in a way to meet unexpected forms of museum growth, may be likened to the farmstead type of Lombardy, capable of endless new forms of shelter for a family, its stock, its tools, and its harvests, each a satisfactory composition; or to a tree like the pine, from which almost any branch may be cut without destroying its picturesque completeness.[13]

The scheme of Diagram 30 is an invention only in the Patent Office sense of a possible "improvement in the art." It may be regarded as a step in a development of which the Naples Museum (1587), the Old Pinacothek in Munich (1826), the Kelvingrove Museum in Glasgow (1901) and the Museum of Fine Arts in Boston (1909), offer successive illustrations. The museum at Naples laid the foundation in its double row of rooms around large spaces on either side a block devoted to access. The Old Pinacothek settled the unit of plan for museums as an exhibition space plus a corridor adjoining. The Kelvingrove Museum adopted the principle of lighting a large interior space from a clerestory. The Boston Museum chose a radial lay-out about garden courts. These steps have been summed by reducing one of the two exterior spaces of the Naples Museum to a corridor, as in the Pinacothek, and devoting the interior space to primary exhibition, while doubling the secondary space in accordance with the modern tripartite division of museum functions: further, by extending the clerestory light of the Kelvingrove Museum to all the exhibition space, the large interior courts becoming naves, and the galleries about receiving attic windows; finally, by carrying on the radial principle, since illustrated also in the University Museum at Philadelphia, the connecting links becoming cloisters. The result is a scheme which appears, and has reason to claim itself, adapted to the needs of museums generally, scientific or artistic, large or small.

The solution of the lighting problem in museums has been halted for a century by a datum of mistaken erudition. The choice of the Classical type—based ultimately on columns against a blank wall—for buildings devoted to vision would be an absurdity were it not a blunder. The hypethral myth is gone, and reasoning should replace it. Which way should light come in a room where people walk about to use their eyes by it? Neither vertically, nor horizontally, but diagonally.

The solution of the problem of overgrowth in museums is as simple as Columbus's egg. They must not be allowed to become so large. It has been proposed that smaller museums, each with its different scope, should be scattered about our newer cities as they have already grown up without design in

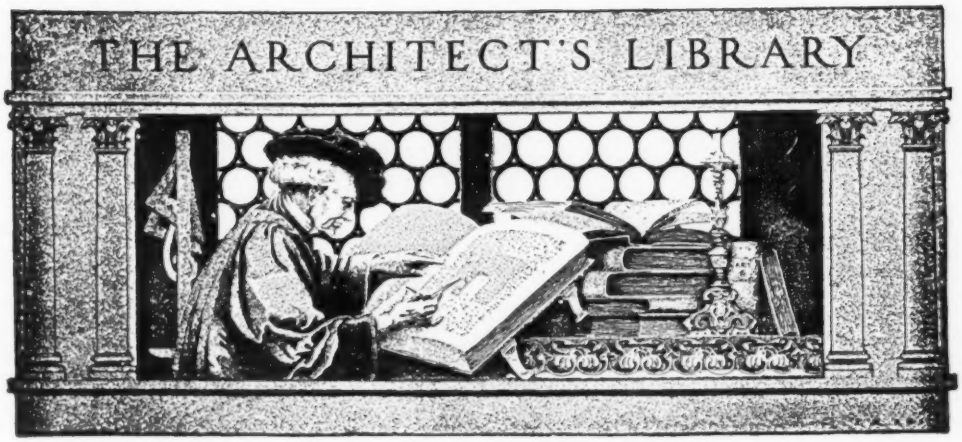
[13] The nave plan in all its stages illustrates in detail the requirements of museum design thus stated by Mr. Clipston Sturgis: "The ideal for the arrangement of each department taken in connection with the previous ideals of a single main floor and independent departments would be (1) that each should have its entrance on a main artery of the group; (2) that the visitor should be given a short circuit of the most important galleries, in which everything shown should be good of its kind, should be given plenty of space, and exhibited under the very best circumstances of light and surroundings; (3) that the route should be made perfectly clear . . . giving the visitor the opportunity to go on to the other rooms of the department, or if he prefers, leave the department where he entered it on the main artery. . . . (4) that a longer, but equally clear circuit should embrace the reserve galleries which should be readily accessible for all who desire, and yet in a measure withdrawn; (5) and that finally, there should be the last group, clear of either circuit, through which there is no thoroughfare, for the work and study of the department." Museum of Fine Arts, Boston. Report on Plans Presented to the Building Committee; by R. Clipston Sturgis, 1905, p. 15.

These five requirements are met as follows in the diagrams: (1) the entrance of each building of the group is on the corridor system connecting all, (2) the naves offer a clear circuit through the most important exhibits shown under the best conditions; (3) the route through them brings the visitor to the point where he entered, and offers him the alternative of returning to the main entrance without seeing anything else; (4) a longer but equally simple route leads through the outlying or subsidiary galleries, which are entirely independent of the naves though no less accessible; (5) the work and the study of the department go on in rooms reached by stairs, and hence wholly aside from either the primary or secondary thoroughfares for visitors. It is a fortunate circumstance that a museum scheme aiming at ideal lighting should prove to embody also an ideal of arrangement reached irrespective of lighting.

older centres. The idea of small museums is most attractive, but one does not just see why the modern world should seek to imitate the chance result of former times.

Why not gather the museums of a town, or most of them, together in its most favorable spot, keeping them just far enough apart not to obstruct each other's light, but still near enough together to be managed, and on occasion used, as one? This is the group system here proposed.

It may be replied to this entire argument, and with truth, that apart from isolated and more or less far-off examples, attic lighting, together with the multiple scheme developed from it, is purely a theory. The question then arises whether it would not reward some museum with great expectations to spend five thousand dollars in constructing and testing an experimental attic-lighted room as a premium of insurance against the possible waste of five million dollars in unsatisfactory buildings.



BOOKS ON COLONIAL ARCHITECTURE

By RICHARD FRANZ BACH

Curator, School of Architecture, Columbia University

PART I. (Continued)

THERE are no less than six good volumes published to date on the Colonial churches as a separate subject. Their value for the architect is, however, restricted in the case of all but one of these. In the first place credit must be given to interested individuals or journals in certain districts, for two useful small volumes on southern churches and one on Connecticut churches have been issued from such sources. The Southern Churchman Company is responsible for an interesting volume entitled *Colonial Churches, a Series of Sketches of Churches in the Original Colony of Virginia.* The descriptive accounts are written in entertaining fashion by a number of persons particularly acquainted with individual buildings, but the illustrations leave much to the imagination. A book of much better handling, written with a slightly keener architectural sympathy, is that on *Some Old Time Meeting Houses of the Connecticut Valley* by Charles Albert Wight; this contains a number of fairly clear halftones but, of course, no purely architectural reference material. A similar book is that on *Historic Churches of America,* written by Nellie Urner Wallington, with an introduction by Edward Everett Hale. This is a useful volume for its historical data; it is well written and contains over thirty plates. Under the same title was published in 1890 a series of large folio plates with accompanying text and illustrations and a general treatment similar to that of the book issued by the Southern Churchman Company noticed above. The plates are sixty in number, published in twenty parts; they are chiefly etchings and ordinary photogravures, the former generally of high quality. The chief interest of the volume is rather sentimental or historical than architectural. The text was compiled by sixteen writers, intimately acquainted with their subjects, who took great pains with the chronicles, legends and traditions, but saw no particular value in the styles of their buildings. Mission buildings are also included, as well as the cathedral at Quebec and the unique Greek church in Alaska.

But the story of the churches has never been told so well as in Mr. Aymar

Embury's volume on *Early American Churches* (New York, Doubleday, Page and Company; crown octavo, pp. xvii-189, 102 ill.; $2.80). The author has a thorough understanding of the Colonial manner of building and a deep sympathy for its significance in American national life. His book becomes an architectural reference work; he is careful to distinguish points of departure for various local influences and has a quick eye for the excellences of design. Although his title is sufficiently inclusive the author has considered only the buildings of the truly Colonial type and has purposely ignored the churches of the interloping Greek Revival type. In this restriction he is lenient in the case of only one example, that of the First Presbyterian Church at Sag Harbor, New York, the solitary survivor of our "Egyptian period," which—may the gods protect the offenders!—was deservedly brief.

In his introduction Mr. Embury confirms the truth of our earlier statements when he writes: "To the architect the principal interest in these buildings is of course their forms, in which were expressed the supreme efforts of the artistic genius of our ancestors, the designers of the Colonial period, whether we call them architects, amateurs, or builders, who were inheritors and practitioners of a concrete and perfected tradition such as does not even to-day exist. Their furniture, their dwellings, and their public buildings were all products of the same genius and the same ideal, and to-day we are seeking and finding in them sources of inspiration no less satisfactory than the best that Europe has to offer." This character of homogeneity is a good lesson to take away with us from our study of Colonial architecture in general. All differences were melted into a plain spoken and direct expression approaching most nearly a uniform ideal, "and it is a rather interesting fact that the change in design from 1638 to 1830 ..... is less noticeable than that in the twenty-five years succeeding the latter date." Therefore we must discount the current understanding of the Northern Puritan simplicity and of Southern aristocratic luxury, for the author points out that the richest examples are to be found in Philadelphia, midway between North and South.

Our earliest buildings, that is, those of the first three generations of colonists, are not illustrated by a single extant example. Nor would they be of greater architectural interest than a lean-to or tipi or igloo, simple indications of the first and most rudimentary needs for architecture, shelter and community protection. John Smith, the doughty captain that figures so prominently in the first history reader, describes the first English church in the new land in these words: "When we first went to Virginia, I well remember we did hang an awneing (which is an old saile) to three or four trees, to shadow us from the sunne; our walles were rales of wood; our seats unhewed trees till we cut plankes; our Pulpit a bar of wood nailed to two neighbouring trees. In foule weather we shifted into an old rotten tent, for we had few better. ..... This was our church till we built a homely thing like a barne; set upon cratchets, covered with rafts, sedge, and earth; so was the walls. The best of houses (were) of like curiosity; but the most part far much worse workmanship, that neither could well defend from wind nor rains." The fact that the connection with the Church of England was quite direct in some colonies made the latter dependent upon the home country for the appointment of ministers to preach in colonial pulpits. In certain colonies, however, the Dissenters and other sects were cast upon their own resources and solved the problem to their own satisfaction by combining church and state physically in the meeting house and in government by obliging all residents in the colony to declare that they believed in God and would attend church regularly. In some cases churches and meeting houses were built beside one another. The church tower served as a lookout as frequently as it did to hang the bells. A sentry was posted there during services and a facetious old burgess introduced a regulation controlling the presence of women and children in the belfry while the sentry was on duty, so that his attention might not be distracted. Armed men were like-

wise placed on outpost duty along the roads leading to the meeting house.

As long as the ecclesiastic connection with England is strong and direct the design of the structures must be expected to hark back to English originals; but when the colonies were obliged to shift for themselves in this respect we begin to find the earliest introduction of home design. Thus while the Virginia churches were apt to recall Church of England precepts, the Pilgrims at Plymouth may be relied upon, in their very first building, which was the meeting house, to show the colors of the new land. This first meeting house incidentally, was a large square building with a flat roof, placed upon a hill overlooking the harbor and surmounted by six cannon. It served the secular and spiritual needs of the colony. These two were generally very intimately connected. An offense against the church was *ipso facto* a political offence; absence from church was as criminal a proceeding as theft itself.

Mr. Embury's book takes account of eighty-one churches erected between 1632 and 1843. Of these six were begun in the seventeenth century, forty-five in the eighteenth and thirty during the first half of the nineteenth century. The majority of them are ascribable to descendants of New England settlers, and of those still remaining the larger part were the work of the Episcopal Church. The Catholic faith of the earliest times is not represented by a single remaining structure, although we have a few of Baptist origin, four or five Lutheran and Dutch Reformed examples and several built by the Presbyterians. But the author points out that local traditions outweighed denominational differences in their influence upon church design. It is also interesting to note that of the eighty-one churches recorded thirty-one are of wood, twenty-eight of brick, nineteen of stone, two of stucco and only one of marble. Despite the greater durability of the other materials, the buildings of wood are still extant in larger numbers.

Only four churches remain which were completed during the seventeenth century; these are: St. Luke's, near Smithfield, Virginia; the Ship Meeting House at Hingham, Massachusetts; the Old Swedes' Church at Wilmington, Delaware, and the "Gloria Dei" at Philadelphia. Other doubtful members of the seventeenth century group are St. Peter's, New Kent County, Virginia; the Quaker Meeting House at Flushing, New York; and the Dutch Reformed Church at Oakland, New Jersey.

The churches of the eighteenth century include some of the finest examples of our early architecture. The buildings represent in most cases the third or fourth generation of buildings on the same site. The first structures were invariably hastily and poorly done, with a minimum of design; these were generally superseded by better structures, perhaps of more permanent material; but usually the second stage was followed by the third because of the rapid increase in the number of colonists and everyone was obliged to go to church. The third building was, as a rule, a much larger and more pretentious church and is in most cases the one that remains for our study. Among the eighteenth century churches are included Old North Church at Boston, designed by William Price; the well designed Trinity Church at Newport, Rhode Island; Christ Church at Philadelphia; Old South Church at Boston; St. Michael's at Charleston, South Carolina; St. Paul's Chapel, New York; Christ Church at Alexandria, Virginia, and St. Mark's at New York. The buildings of the nineteenth century are, of course, much better known and still remain to us in large numbers. Of these many are influenced by the new Greek Revival tendency which even in 1806 had begun to make itself felt outside the large cities. Among the good examples of the better Colonial type we might mention the First Church of Christ at Hartford, Connecticut; St. John's Chapel, New York; the Center Church at New Haven, Connecticut; the First Unitarian Church at Deerfield and the Meeting House at Ware, both in Massachusetts. The chief names of designers are those of Asher Benjamin, Ithiel Town, John McComb, David Hoadly, Charles Bulfinch and Isaac Damon.

Mr. Embury ends with a vigorous defense of the Colonial manner of build-

ing as an important feature of the art of the world at large during the period of its activity. We can assuredly agree with him that its influence upon the American architecture of the moment is "potent and far reaching," and he maintains in addition that this influence "has even been reflected back upon the European styles, so that we continually find in modern European work traces of design which originated in the United States in the eighteenth century." He scores the critics because they find the earliest citizens of the United States negligent in the determination of an "original style" and adds that "if by an 'original style' of architecture is meant one which bears no traces or reminiscences of the Greek or Gothic, American designers would have had to . . . . forget two thousand years of inherited tradition, and begin where the cave dwellers of Europe began ages ago; since while a single memory of the mechanical improvements which have been made since the days of the cave dwellers persisted, the forms in which these were expressed would likewise have persisted. Had we been red Indians we might have developed an autochthonous architecture, as they did, but we were transplanted Europeans, as incapable of forgetting the traditions of our races as were those Europeans who never left their native lands." He declares with justice that we were prompt to develop our own vernacular speech in building and that although the early builders had not at their command means sufficient to erect large buildings of costly materials, they were quick to speak in an American tongue, unhampered by the racial characteristics of the builders themselves, and that their efforts were well represented for many years in small buildings only.

The author then states the case for the quality of Colonial design in the words: "The characteristic of the style is (by comparison with European work of the same period) a greater dependence upon line and mass than upon ornament, which was sparingly introduced and never permitted to dominate. The best American architecture of to-day has not dissimilar characteristics, and, wherever the churches can be criticised, it is invariably on the ground of over-severity and extenuation of line, and never because of vulgarity and ostentation."

We are assured of the lasting value of Mr. Embury's book and that it will find a place of importance in the libraries of architects and of laymen; it is a contribution of intrinsic worth to the literature of Colonial architecture.

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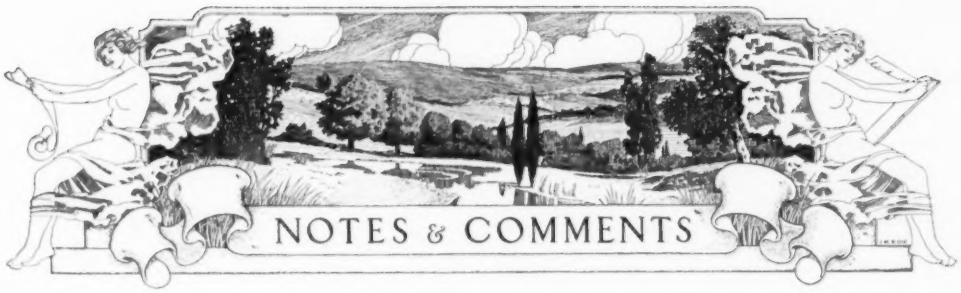

Inoffensive Gas Tanks.

Of all the structures which the needs of civilization have developed, there is none which exceeds in unsightliness the towering gas tank. There have been attempts to make them architectural. When the Municipal Gas Works was built near Philadelphia, at Point Breeze, many years ago, the gas houses and tanks were built in a pseudo Gothic style; and, while the gas houses themselves were not without merit, the attempt to make of the gas tanks a thing of beauty reminded one of the educated stylishly dressed dogs at the circus. Perhaps some genius could solve the problem of an architectural gas tank, but to date there has been no sign, even in the hands of a genius, that the problem would be possible.

The average gas plant superintendent, remembering that red lead is one of the most efficacious of paints for the protection of steel, paints his tanks and towers a brilliant red or the equally obtrusive dark reddish brown. Sometimes his artistic spirit demands expression and he paints his frame work black in contrast to the red ground of the tank itself. In any case the results are distressing. The gas tank occupies so large a spot in the landscape, both in width and in height, and its outlines are so uncompromising that there is nothing that destroys the beauty of a landscape with equal efficacy.

There was a great gas tank built some years ago just back of the beautiful shores of Bay Ridge and directly opposite the residential section of Staten Island that so absolutely smothered the natural beauties of the high banks of the Harbor with its crude red bulk that it almost hurt one to look across the Narrows.

But, and this is the *raison d'être* for this article, one day a blessed paint salesman convinced a gas works superintendent, who should be of happy memory, that aluminum paint would be an ideal coating for the steel work of the tank; and, lo! a miracle occurred. The impossible transpired. The tank and all is ugliness disappared into the sky.

Aluminum paint is naturally of a color very close to that of a grey hazy sky and it moreover reflects in a diffused way, somewhat as the clouds themselves, the direct light from the sun. Remember this, and if you happen to know any as yet uneducated gas works superintendent, pass the good word along.

A Chronological Catalogue of Buildings.

Mr. Barr Ferree, writing in the Journal of the Royal Institute of British Architects, suggests the necessity of the preparation and publication of a complete catalogue of all buildings of architectural value erected in any country, with a chronology of their erection and alterations.

According to Mr. Ferree's plan, the data should include "the country, political subdivision, city or town in which the building is situated; its name, if any; a condensed and concise chronological summary of its history; brief mention of structural or essential decoration, as sculpture, wall paintings, mosaics, glass; and a brief bibliography strictly limited to the most important monograph or paper in which the building is described."

This publication would serve as an index to bind together the vast mass of archaeological work that has been done in recent years, but whose value is greatly lessened by the lack of just such a systematic summary.

The compilation of such a work, including, as Mr. Ferree suggests, all buildings of merit erected prior to the year 1800, with

their alterations up to the present, need not be enormously expensive. Doubtless a plan for international co-operation could be readily organized, and many local architects and archaeologists would be only too glad to contribute the information which they had collected from various sources.

The publication of the work would, in all probability, involve greater expense than the collection of its contents. This, however, Mr. Ferree believes, would easily be met by the contributions of technical societies, whose number is so great as to make the burden on each relatively slight, and undoubtedly many wealthy individuals would also be glad to aid in this effort.

The value of such a catalogue may be readily judged by our readers who remember the articles by Mr. Ferree himself that appeared in these pages several years ago, on the subject of the French cathedrals, and which included a catalogue that, in its special field, comprised most of the features that he now proposes.

A Rational Office Building.

When the principle of a new law is correct, it is usually found that the practice of intelligent persons has definitely antedated its enactment. No law has as yet been passed in New York City regulating the construction of skyscrapers, but intelligent operators are beginning to build their buildings so as to obtain results which would be assured by the passage of the proposed law.

The building at 8 West Fortieth street designed by Starrett & Van Vleck for Mr. Paul Starrett and Mr. Metcalfe is a typical example. Here has been appreciated the fact that the most valuable possession of an office building is outside light, permanent and assured outside light. In this building it has been recognized that, given adequate elevator service and fireproof construction, height—moderate height, if you will, as compared to the highest building in the world, but towering as regards old fashioned standards—is an advantage. The owners and the architects have designed a building on a lot 62 by 100 feet in the middle of the block completely finished and with windows on each of its four sides. Of course, that this might be possible, it was necessary for the owners, by purchase or otherwise, to obtain permanent light privileges from the owners of the two six-story buildings on each side of the new structure. But consider what a wonderfully valuable property they now have. Facing, as the new building does, the Public Library on the north, having a court fifteen feet wide on the south, and enjoying a light easement over the low six-story buildings, in the one case thirty and in the other case forty feet wide, on the east and west, it is essentially a permanent investment, while the very success of the high building increases the value of the six-story buildings on each flank.

Architecturally, the building is of very considerable interest and merit. The brickwork, of two or three shades of the same colored brownish gray brick, is most pleasing in its texture and tone. The steel window frames and sash with their small panes, while of special value for fire resisting purposes, are of distinct architectural value, particularly in a building such as this, where the walls are pierced to the extreme limit with openings; they tie the whole surface of walls and windows together and give a solidity of appearance to the shaft that would be wanting with the usual single large sheet of plain glass fenestration.

The treatment of the first story is original and in good taste. For the rest, one questions somewhat the position and shortness of the round-headed windows towards the top of the shaft and wishes perhaps that they might have been raised a story; and wonders whether the architects themselves do not regret in actual construction the truncated pyramids above the attic, however much they may have liked them on paper. Do you suppose they would be willing to take them down except, perhaps, at the angles, where they soften the break between the shaft and the roof story? Otherwise the treatment of the attic and roof is most successful.

The building is a complete composition and a notable addition to the architecture of the city of New York.